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ORIGINAL COMMUNICATIONS.

TREATMENT OF BURNS.

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Burns are usually produced by (1) a flame; (2) hot metal (this class includes hot coals); (3) steam; (4) electric flash; (5) chemical burns—escharotics generally (to this class belong *x*-ray burns).

A flame by igniting the clothing produces burns of varying degrees, on account of the variations in temperature at different parts of the flame, and they are usually spread over large areas.

Hot metal conveys intense heat and produces burns of equal degrees on the exposed parts, and they are usually deep burns, implicating circumscribed areas.

Steam produces burns which usually implicate a large area, but on account of its comparatively low temperature these burns are not as deep as those from other sources, unless the victim be exposed to the steam for a considerable length of time. The respiratory tract and the mouth are very apt to be involved from burns of steam.

Electric flashes produce very intense heat, and though the areas affected, as a rule, are not large, the depth of the burn is usually greater than from any other source.

Chemical burns have usually a distinctive effect and malignancy entirely out of proportion to their apparent severity. They seem to have a peculiar inhibitory effect on reparative metabolic processes.

In treating a burn one should always bear in mind its source, since the method of treatment should be varied according to the type and degree of the destruction of tissue. Burns produced by comparatively low temperatures are much more rapid in all reparative processes, and, unless a very large area of skin is involved, they usually heal rapidly, and they are not difficult to treat.

The skin, though taken by surprise in cases of burns, acts as a marvelous resister of heat, and to an astonishing degree protects the deeper parts. In ordinary burns it is rare to find the subcutaneous tissues actually destroyed, though if suppuration occurs they may slough afterward.

Burns must be considered, as regards the general organism, a traumatism of greater or less degree, and locally as a destruction more or less of a very important excretory organ, and the organ which regulates the bodily temperature.

SYSTEMIC TREATMENT.

Systemic treatment is as important as—in some cases more so—local treatment, and usually is the first indication. Every considerable burn is followed immediately by shock. This shock is frequently so intense as to threaten the speedy death of the patient. The variety of shock is commonly psychic. The symptoms are the same as in shock of other varieties; they demand more careful attention because a part at least of the skin will have been destroyed and external applications which in other conditions might be employed cannot be used in burns, and the equalization of the circulation cannot be restored as rapidly, because the capillaries of the destroyed area will remain thrombosed and shut off from the general peripheral work. If the burned area be very large the danger

of the shock will therefore be proportionally great.

The patient will feel cold. If practicable external heat should be applied; in most cases the feet will be available for hot-water bottles, hot bricks, or some other means of heat. If the mucous membranes have not been involved the patient should be given hot drinks by the mouth—*no alcohol,* however. Hot lemonade without sugar is very good, and hot black coffee is efficient. Rectal infusions of hot saline solution, and if a suitable region of loose skin is left uninjured hypodermoclysis of normal salt solution, may be given. In cases of extreme gravity Crile's recommendation of direct transfusion of blood, viz., anastomosing an artery of the donor into a vein of the patient, would serve an excellent purpose. In addition to these measures of restoring heat and circulatory medium, morphine given in a full dose hypodermically is one of the best things, as it serves the double purpose of relaxing vasomotor spasm and it relieves pain and apprehension.

After shock and pain have been relieved as far as practicable, the condition of the heart and respiratory organs, especially in cases of burns of the respiratory tract, should be most carefully investigated. It will be useless and inhumane to attempt any permanent dressing if the patient is too weak to bear it. These dressings are always tedious and require much time to do properly. If the physician therefore loses sight of, or does not recognize, a condition of great weakness in his patient, and in the zeal of the asceptician proceeds at once to do the dressing, the chances are that the patient will be dead before he has finished.

One thing to bear in mind is that burned areas have been made sterile by the heat they have endured. So, unless they have been infected by some application or covering, they require no special disinfection—they need sterile covering, that is all. This suggests, however, a very important point. In transporting burned persons it is of vital importance to remember that burned areas absorb very quickly, especially those produced by flames and steam. Any micro-organisms in a cover thrown over a burned person are very apt to be inoculated into the victim. Thus I have had two or three cases of tetanus occur after burns because horse blankets were used to cover the patient while he was being transported to the hospital. The other systemic effect to be watched for and dreaded in burn cases is an acute nephritis. This is very common in severe burns. Nearly always some bronchitis occurs, and not infrequently hypostatic pneumonia supervenes. Another very grave condition comes on sometimes after healing is well advanced in extensive burns, viz., pulmonary embolus. The onset is very sudden, and the condition of dyspnea and terror is a very distressing one. I have recently had two cases of this complication—one recovered and the other died. Nitroglycerin hypodermically, oxygen by inhalation, and diffusible stimulants seem the best treatment.

These complications must all be treated on general principles. They are always grave indications in cases of severe burns. In my experience duodenal ulcers after burns are very rare. I have seen but two or three cases occur in several hundred burns.

LOCAL TREATMENT.

There is no specific local treatment for burns. Many specific things and many specific methods have been recommended; all these I have tried are not generally adaptable and failed in many cases.

Large burns—that is, burns implicating large areas—are very difficult and trying injuries to dress both for the patient and the surgeon. It is important not to prolong the dressing when the patient is very weak. As I said before, the burned area is usually sterilized by the heat which caused the burn, but the adjoining skin which is not burned has not been sterilized. I think in most instances the surgeon makes the mistake of trying to render the injured area aseptic when he ought to use every practical endeavor to cleanse and sterilize the uninjured skin which adjoins or surrounds the burn. For the pain the first permanent dressing employed should be warm sterile alkaline solutions—such as one-per-cent

solution of bicarbonate of sodium or potassium, or a two-per-cent solution of borax. If these salts are not at hand ordinary chloride of sodium in the usual decinormal strength will do. If soiled coverings have been placed over the burns some attempt must be made to wash off the surface of the burn very gently with an antiseptic solution. A two-per-cent solution of carbolic acid or a one-per-cent suspension of creolin, followed by normal salt solution to remove the carbolic or creolin, may be used.

Large burns should be dressed in sections; the whole surface should not be exposed at once. The clothing, or such shreds as remain, should be cut and carefully removed. Then the burns should be covered with a layer of aseptic gauze wet in a one-per-cent solution of bicarbonate of sodium or one of the other solutions mentioned above. A certain section should be selected, the surrounding skin being carefully washed with soft or fluid soap and sterile water (always scrubbing in a direction away from the burn); then carefully wash off the burn with a mild antiseptic (formalin or bichloride of mercury should not be used, as they are very irritating); then cover with wet gauze, and carefully wash the adjoining skin with a five-per-cent solution of phenol; dry carefully with aseptic pads, then apply the dressings to the burn. Go over the whole area in this way section after section. As to the dressing itself, I think it should be varied according to the individual case. Superficial burns, such as one sees frequently caused by a flame, or by steam, if not extensive do very well with a one-per-cent solution of picric acid dressing—viz., sterile gauze wrung out of a one-per-cent solution of the acid and laid directly over the burn. In case of blisters or large blebs, these should be snipped carefully with a small, sharp-pointed scissors on one side near the base and drained. The epidermis should be carefully preserved at the first dressing. Another dressing which has given me great satisfaction for superficial burns is equal parts of powdered boric acid and subnitrate of bismuth sprinkled over the burn, and laid over this a vaselin plaster made by wringing out gauze from a one-per-cent warm creolin suspension and a thick layer of sterile vaselin spread on it. A thick layer of sterile absorbent cotton should be placed over this, and the whole held in place by a snug but not tight roller bandage. For the deep burns, such as hot metal and electricity produce, I think immediate applications of sterile gutta-percha tissue covered by a thick, moist aseptic dressing is best. Dry dressings are rarely applicable to fresh burns. Also no woolen fabric should be placed directly over a burned surface, for much serum will be exuded; this will dry and cause the cloth to stick to the surface of the burn, with the result that when the dressing is removed much of the epidermis will be taken with it, and great pain will be caused by pulling away the adhesions from the surface of the burn.

Deep burns, those which destroy the whole thickness of the skin at once, are followed in many instances by the formation of a very hard, tough slough, which, on account of the coagulation of all the albuminoids in the area involved, shrinks and pulls on the surrounding skin so that a feeling of extreme tension results; besides, much suffering is produced from the pressure on the underlying nerve filaments. In a short time this charred area sinks below the level of the uninjured skin, and leucocytes soon migrate in increasing numbers and try to rid the skin of the dead part; an area of redness and swelling surrounds the slough, which adds to the pain; and so on. This process may be shortened and the pain relieved by incising the dead area down to the living tissues. In cases in which this dead surface has been as broad as 6 to 15 centimeters I have frequently made multiple short incisions through it. These incisions permit much serum and sometimes lymph and pus to exude, and enable one to disinfect the slough much more thoroughly. These burns soon produce large necrotic areas which cling tenaciously to the tissues below, and which separate very slowly. They always suppurate more or less, frequently profusely, and most disagreeable odors are produced. When the slough is still in place I have found the application

of salicylic acid directly on the slough, gutta-percha tissue over this, and a dry sterile dressing over all, very satisfactory both as an efficient disinfectant and deodorant. For less offensive areas of this kind powdered boric acid applied in the same way is good.

An important point one should always bear in mind is that burned areas, especially larger superficial burns, absorb very rapidly any soluble substances applied upon them. One must be very careful therefore to use no poisonous substance as a dressing, or dusting powder, or direct application. Instances are known in which acetanilide has almost fatally poisoned patients when used as an external dressing on the skin.

No matter how careful one may be in cases of extensive burns, before the sloughs separate there will be some disagreeable odor. Sometimes this odor is very offensive. It has always seemed to me that any organic oil or fat applied to the burns as a dressing, even if sterile when applied, very rapidly becomes infected from the bacteria of the sloughing skin; it decomposes and adds to the fetid odors, and, I think, to the suppuration and sloughing. One cannot safely combine enough of an antiseptic with the oils or fats to prevent decomposition on account of the possible absorption. There are but two substances which seem to obviate to an extent this difficulty, and which make oil a possibility in some cases: these are ichthyol and Peruvian balsam. These may be combined up to five per cent, and be very useful in an antiseptic way and as deodorants. I think, however, it is much better not to use oils or fats, except the inorganic one, vaselin.

On account of the offensive odor burn cases ought to be treated after the open-air method and in apartments isolated from the common surgical wards; and as these odors attract flies in great numbers in the summer-time most sedulous care must be taken to thoroughly screen the patient so that flies may not get on him. I have seen one or two cases of most distressing, repulsive, and serious condition of maggot infection because flies were not kept away from the patient.

After sloughs have separated and granulations are begun, oily dressings, I think, should not be used. Nowadays surgeons rarely treat ulcers by the application of salves. The principles of aseptic surgery should prevail, and the dressings applicable to large ulcers be employed. Skin-grafting furnishes the most rapid and efficient assistance. Reverdin grafts may as a rule be most easily obtained; by those who are not well initiated in the technique of Thiersch's method, these small skin grafts are much more efficiently employed. Many years ago I began to use sponge-grafting (after Hamilton, of Edinburgh, recommended sponge for grafting into bone cavities) for ulcers when I could not get skin grafts. The method I recommended, and still employ, is to use small bits of a thoroughly cleansed and bleached moist sterile sea sponge, applied to the surface of the ulcer with the same precautions and after the same manner that one uses the small skin, or Reverdin, grafts. These act remarkably well as a substitute for skin grafts. Some years ago Dr. Lusk, of Warsaw, N. Y., advocated the use of dried epidermis for grafting. He recommended blistering to raise the epidermis; evacuate the serum, and when the epidermis is dry remove it in small strips and apply to the ulcers. In burns there are nearly always several blistered spots or places where the epidermis exfoliates. At St. Luke's Hospital we have frequently removed these epidermal exfoliations from the patient and applied them as grafts to the ulcerated areas. The epidermal grafts act well if properly managed. For ulcers of moderate size, and for establishing islets and connections in large ulcers, Thiersch's method of using large skin grafts is best, and it promotes much more rapid healing than other methods.

The limits of this paper will not permit me to discuss the indications for treatment in the various regions except in a general way. After the sloughs have separated, and clean ulcers are left, the indication is to hasten healing with the formation of as little fibrous tissue as possible. As I said, grafts will do this, if careful asepsis be

obtained and preserved, and in this stage one usually may preserve asepsis.

Two other extremely important points are to prevent adhesions of adjoining surfaces, and to prevent permanent flexures of the joints. Sedulous care should be used always to interpose separate dressings over two contiguous surfaces—chin and neck, axilla and arms, fingers, folds of the groin and thigh, scrotum and thighs, and about the lips of the vulva, etc.

To prevent synechia when the eyelids and ocular conjunctiva are burned, epidermal grafts are excellent expedients. When the location of a deep burn makes it almost certain to produce ill effects by the contraction of the cicatrix, these regions should especially be grafted, repeatedly if necessary, and sufficiently, if possible, to furnish enough epidermis to cover the dangerous area.

Limbs must be placed in splints or some retentive apparatus used to prevent flexures and fixation in improper positions. Keloid formation after cicatrization requires exsection and grafts or transplantation of skin.

THE TREATMENT OF BURNS.

BY WALTER LATHROP, M.D.,

Superintendent and Surgeon, State Hospital, Hazleton, Pennsylvania.

Among the many cases brought to an institution of this kind there are none that appeal more to the sympathy than those who are injured by fire. For aside from the seriousness of the case, and the early suffering, there is the future thought of possible disfigurement as well as of parts being crippled or rendered entirely useless. In taking up this subject, and contributing my humble portion to this symposium, I am aware that in few instances do the writers on this topic differ more widely; each man of more or less experience has some pet treatment which he thinks is the best, and is sincere in his belief. My earnest wish is that from this series there may be gleaned something of benefit to all who may at any time be called to treat such cases.

I shall not attempt to classify burns, as the text-books do, in regard to the time-honored degrees, but will endeavor to treat the subject in general, mentioning the degree of burn if necessary. In a locality surrounded by mines, railways, and workshops, there occur necessarily numerous accidents, ranging from minor affairs to the most serious; but it is usually from the mines that we receive the cases that are burned. In order to treat the subject intelligently we will place it under four headings:

1. Burns by gas.
2. Burns by steam and water.
3. Burns by powder.
4. Premature blasts.

The most common, as well as the most serious, cases we receive here, with the exception of number 4, are those burned by gas. There are usually two of these at a time, a miner and his laborer; one often burned more than the other, especially if he receives the full force first, by being some few feet ahead. The cause is often due to one or the other entering a supposedly safe chamber, or breast, with a naked light.

The body of gas, which may have gathered rapidly—after being inspected by the fire boss—is instantly ignited, and a fierce blast of lurid flame envelops the unfortunate man or men. The next group are usually firemen, or pumpmen, who are scalded by steam or water from bursting pipes, or blowing out of cylinders or boilers. Burning by powder is often due to carelessness, and in one instance there were eight men brought under my care, the cause being due to one man carrying a keg of powder, not covered, into which a spark from his lamp fell. Two of the men succumbed to their injuries some ten days later.

The last class of cases is a very serious one, owing to the fact that the victim is nearly always badly cut or punctured by pieces of flying débris, and also he frequently requires amputation of a limb, or

portions of one, and often enucleation of one or both eyes. The treatment of this class will be taken up by itself.

In speaking of the methods pursued by myself and assistants, in managing the first three classes, let us imagine that an ambulance has just driven up to the door, bringing a miner who has been burned by gas, steam, or powder. He is carefully carried to the receiving room, for examination and dressing. We still find at times a liberal use of that old favorite, carron oil, which has been applied by his willing and anxious comrades, but which is a nasty preparation, and while no doubt of value is better left unused in this day and generation. The clothing is carefully removed, being *cut off*, not pulled, from the affected parts; any portion sticking fast is let alone for the time being. The skin will be found in a dry and crisp state in most cases where gas or fire is the cause, and if of considerable depth the appearance is a dull gray about the hands, or beefy red where the flesh is deeper. If the patient has been scalded, the skin is usually raised, and peels off in strips, while the under surface is bright-red and moist. If from powder, the surface affected is blistered and black, which changes to the characteristic blue pigment, or "powder marks," when recovery occurs.

The burned surface is covered temporarily, while the uninjured parts are washed. The eyes are first looked after, and frequently show little sign of injury at the time, but in a few hours the lids are greatly swollen, as is also the entire face. After being washed, the injured parts are dressed (loose skin being removed) by picric acid gauze; this is used in nearly all cases, being applied over the entire burned surface, covered with plain gauze, frequently cotton, and a roller bandage applied to limbs, and a many-tailed one about the abdomen and chest. A mask is placed over the face, with openings for the mouth, etc. Cold compresses are used over the eyes with great benefit. When picric acid *solution* is used, we prefer lint to gauze, and apply in the same manner. The acid dressing is used for several days, or if the burn is not deep, is applied until the case is healed.

In cases of deep burns, in which more or less sloughing will occur, the dressing after four or five days is changed to petrolatum, spread on lint, with a small quantity of iodoform or acetanilide dusted over it, but not enough to produce dangerous symptoms from absorption. At each dressing the burned surfaces are washed with 1:20 carbolic solution, often preceded by spraying with peroxide of hydrogen from an atomizer. Any dead tissue is carefully cut away, and then the dressings applied. During the suppurating stages burns are dressed daily until healthy granulations appear, after which only sterile dressings are used. In obstinate cases, or slow healing ones, my favorite dressing is composed of ichthyol, balsam of Peru, and vaselin, spread on lint, and frequently when this fails I have seen remarkable results from the application of the old-time resin cerate, and to show our faith in it as a stimulant to any indolent surface I might add that we use about one hundred pounds each year.

The results, as shown in more than five hundred cases, have been most excellent; in the majority of cases there has been little or no disfiguring and very little impairment of function. I refer of course to the cases in which the burns were of the first and second degree.

The *fingers* should always be *carefully dressed by having gauze between each, that no webbing may occur.* Splints should be used where the tendency to contraction is shown in arm or leg.

Shock is always present to a greater or less extent in these cases during the first twenty-four hours, and is treated by the use of morphine and atropine as well as strychnine hypodermically.

The preparation of ergot known as "ergone" is one of the best means I know of in these cases, *or any case of shock,* and is of distinct benefit. We give it hypodermically every hour, for four hours, 25 minims at each injection. The thirst which is so often distressing can be greatly relieved by enemas of salt solution, three drachms to the pint of water. *Whisky is contraindicated,* and if given will nearly always produce vomiting. Hot water or

clear coffee is a better stimulant, if any is desired. The kidneys need attention, as in serious burns about the back and abdomen suppression may occur and uremic symptoms soon develop. I am in the habit of giving as routine treatment an effervescent salt of lithia combined with bicarbonate of soda, potash, and caffeine, with plenty of water.

Cases of the fourth division usually present a most striking appearance and are generally due to a premature blast. They are fully as common as the ordinary cases of burns, and are frequently very serious and more disfiguring.

We also have many cases due to the explosion of the famous dualin cap (which is used to set off the blast). These copper caps, small and innocent in appearance, are often found by children and exploded by them, with the loss of one or more fingers and sometimes the whole hand. In the case of the premature blast the miner standing in the circle of diminished atmospheric pressure is not only burned by the flash from the powder, and often terribly lacerated by flying débris, but frequently has hands or limbs, or both, torn to shreds.

On admission to the hospital these cases are treated first for the hemorrhage and shock which are always present, and when possible the uninjured parts are thoroughly cleansed. The patient is then anesthetized, and coal or other foreign matter extracted from his body, but it is impossible to remove all, and subsequently small pieces are thrown off by nature, through suppuration. Amputation is done where necessary. The eyes are usually filled with fine dirt and minute particles of coal. These particles are removed as completely as possible, and boric wash used, followed by iodoform, and both eyes bandaged for several days, dressing each day if needed.

Where the eye is destroyed, which is not uncommon, enucleation is at once performed; where serious corneal trouble develops, or any dangerous eye symptoms, we endeavor to have the case transferred to the Wills Eye Hospital, if he can be moved.

The treatment of the body, or injured parts, consists of sterile dressings, renewed daily for the first week, then followed by the special ointment mentioned, vaselin and iodoform, or stearate of zinc with acetanilide.

Picric acid is not used in these cases, but carbolic acid, 1:20 solution, is exceedingly valuable, and at each dressing is applied thoroughly over the entire injured surface; where there are several deep holes we keep them drained by gauze packing moistened with carbolic solution 1:20. We often reverse the first treatment and use the vaselin dressing first, followed by dry dressings. The results are good in either method, surgically, while the cosmetic effect is always the same, the patient being marked for life by the characteristic coal or powder stains. I have had no experience with the immersion or bath treatment of burns, and while it may be good I am content to get the excellent results already gained by the methods mentioned.

To summarize: For burns of moderate severity from gas, water, or powder, *picric acid comes first of all.* It is wonderfully soothing in effect and promotes rapid granulation and healing.

For deep burns, picric acid for five days or a week, followed by vaselin on lint, with iodoform, or acetanilide (this last is *very valuable,* but *requires watching where a large surface is involved*). The burned area is cleansed daily with *carbolic solution* before reapplying dressings. When the surface is dry or free from irritating discharges, compound stearate of zinc with acetanilide is most valuable.

Indolent and non-healing surfaces are best treated by resin cerate, and to me it is one of the most helpful preparations we have. Skin-grafting is the rarest of operations here, and *resin cerate gets all the credit.*

For explosion or blast cases the treatment is as mentioned under the fourth division.

The systemic treatment, as mentioned, is almost routine, as regards ergone, quinine, and especially the preparation of lithia containing sodium and potassium bicarbonate with caffeine. The results are excellent both as to recovery and cosmetically, except in class four.

THE TREATMENT OF BURNS.

BY ALLAN W. URMSON, M.D.,

Surgeon to the Newcastle Works and Furnaces of the Carnegie Steel Company, Newcastle, Pa.

It is often a difficult problem to know which is the best local treatment to use in burn cases. Whatever treatment is adopted, the aim should be to limit the resulting inflammation, prevent infection, assist the normal elimination of the eschar, develop healthy granulations, and limit the deformity.

Burns of the first degree seldom require any treatment. In slight or moderate burns I apply strips of sterilized gauze, saturated with a nine-tenths of one-per-cent watery solution of picric acid; over this I place a thin layer of absorbent cotton, and secure the whole dressing by a gauze bandage. I allow this to remain on the part for two days. A second dressing is never necessary.

In second-degree burns, those in which the inflammation of the skin results in the formation of vesicles or bullæ, I apply the same solution, after carefully removing the clothing from the injured part. Blisters are evacuated through punctures, care being taken not to disturb the elevated epidermis, and the burned surface cleansed as thoroughly as possible. Strips of sterilized gauze are then saturated with the picric acid solution and applied in the same manner as in burns of the first degree. This is left on the part for two days, when the dressing is thoroughly moistened with the same solution to soften it, and removed. A second dressing is applied in the same manner and allowed to remain on the part for two or three days. This is usually all the dressing necessary.

The picric acid solution allays pain, limits the tendency to suppuration, and leaves a smooth, supple cicatrix. There is some objection to the use of this solution, owing to the yellow stain it leaves. It is my custom immediately after dressing a case with it to wash my hands in alcohol, which readily removes the stain.

In burns of the third degree I am more cautious in the use of the picric acid solution, for fear of poisoning the patient, although I have never met with any ill effects from its use. I allow the dressing to remain on the part for twenty-four hours, after moistening the gauze; I then remove it and dress the burned surface with some sterile powder, usually aristol, maintaining as dry a wound as possible. I dress these cases every day. Should suppuration occur, I use a spray of hydrogen peroxide, irrigate the wound with normal salt solution, remove as much of the slough as possible, dust powder over the surface, and apply sterile gauze and fix by gauze bandage.

In burns in which there is deep sloughing and great destruction of tissue I employ the immersion bath of 1:12,000 solution of bichloride of mercury, maintaining the temperature at 37° to 38° C. The influence of this bath on the wound is most favorable. There is a ready escape of the discharge, reduction in temperature, and the freely granulating surface is apt to be covered more readily with skin.

Large granulating surfaces are covered with skin by the transplantation of Thiersch skin grafts.

Much has been claimed for the open method of treating burns. Experience has convinced me that while it acts nicely in first- and second-degree burns, treated in hospitals, in most cases it is unsatisfactory when carried out at the patient's home. In cases I am able to send to the hospital, I apply the picric acid solution for twelve hours, then remove all dressings, place the patient in a sterile bed, make a tent of the upper bedclothing, give morphine to relieve pain, and allow nature to form crusts, which render the field unfertile to all microorganisms by depriving them of the moisture necessary for their development. In cases in which there is much moisture I

find it necessary to dust some sterile powder over the burned surface.

The scar under this treatment is smoother, smaller, more flexible and movable than under the occlusive dressings.

I have abandoned the use of carron oil, owing to the great amount of sloughing which invariably follows its use.

Of course in all cases I give stimulants when indicated, use opiates for relief of pain, and regulate the functions of the body.

TREATMENT OF BURNS AT SHELTERING ARMS HOSPITAL, HANSFORD, W. VA.

BY JOHN EGERTON CANNADAY, M.D.,
Surgeon-in-charge.

We receive a large number of burned patients each year. These burns are produced by a number of different causes, among which are premature explosions of powder and dynamite, contact with live wires, steam, and hot water. Serious burns also result from contact with coke ovens, boilers, or other heated objects when the victim is stupefied by alcohol.

When these cases enter the hospital, shock if present is treated by the application of artificial heat and by the administration of normal saline solution by rectum or subcutaneously. The soiled clothing worn at the time of the burn is removed and the patient is given a warm sponge bath. If necessary opiates are given to relieve pain. As much of the necrotic tissue as possible is removed with scissors and tissue forceps. The burned area is cleansed as thoroughly as possible by the free use of normal saline solution. Sterilized petrolatum is liberally applied, and a light gauze dressing is bandaged over this. This dressing is changed daily or oftener. Each time the wound is cleansed as thoroughly as possible, scabs and bits of necrotic tissue being removed. By keeping the surface as clean as possible the absorption of septic material will be kept at a minimum. The sterile petrolatum protects the freshly burned and sensitive surface from the air, prevents the gauze from sticking to the granulations, is inoffensive in odor and appearance, and is inexpensive. If the burned area is large, there is danger from absorption in using the stronger antiseptics in ointments or compresses. Boric acid and several other of the so-called mild antiseptics are powerless to prevent germ growth, hence I do not depend on them. Frequent care and careful dressings will in a large measure prevent the offensive odor that sometimes is so apparent in these burned cases. If pus appears it is removed by thorough irrigation, and the part affected is lightly touched with a weak solution of iodine.

As it is not always possible in the beginning to tell whether or not the entire thickness of the skin has been destroyed, I usually wait about three weeks before considering skin-grafting. By that time the skin left will have had ample opportunity to show its powers of regeneration. Preparatory to this step the granulations must be smooth, firm, and in a healthy condition. In attaining this condition it may be sometimes necessary to lightly touch especially exuberant granulations with the thermocautery. A bidaily dressing of gauze wet with chloral hydrate solution (2 grains to the ounce of water) and covered with oiled silk will often secure a healthy granular surface.

In the operation of skin-grafting a modified Thiersch method is usually followed.

During the early stages the patient is kept quietly in bed on a liquid diet. The bowels are kept open by salines, and the patient is encouraged to drink water rather freely. During the later stages some of the preparations of iron are used. In accordance with Sneve's suggestion certain cases of superficial burns are treated by exposure to the air after being cleansed and dusted with some inert sterile powder. The desiccating influence of the atmosphere early dries a leaky surface and healing takes place rapidly.

THE TREATMENT OF BURNS IN THE STATE HOSPITAL FOR INJURED, FOUNTAIN SPRINGS, PA.

BY J. C. BIDDLE, M.D.,
Surgeon-in-chief.

As you have asked simply for the treatment of burns in this hospital I will give it to you in as few words as possible. I will not even attempt any classification or description of the symptoms. The symptoms vary much, according to the part of the body involved in the burned area, the temperament of the patient, and the particular degree of the burn.

The wound is as a rule of such a very painful nature that extensive or thorough washing for the purpose of sterilization is simply out of the question. In an extensive burn, or in any case in which there is great shock, washing must of necessity be dispensed with. To make a surgically clean wound in a burn where the epidermis has been destroyed is in my judgment impossible; of course the heat will have destroyed all the germs on or in the skin at the time, so that only those coming in contact with the surface afterward need be destroyed or removed.

In the treatment of more than three thousand cases of burns I have tried all the treatments suggested from time immemorial, including picric acid. My own treatment which I have been using for twenty-three years is composed of carbonate of lead 1 pound, powdered acacia 6 ounces, bicarbonate of soda 3 drachms, and a sufficient quantity of linseed oil to make a thick, creamy paste. This is spread upon lint or Canton flannel, then cut into strips and applied to the burnt surface, after all the blisters have been cut open with a pair of curved scissors, all the shreds of cuticle removed, and washed with soap and water as thoroughly as the case will permit. Care should be taken to apply the dressing neatly and not too tight. The fingers or toes should be well separated and all joints extended. The first dressing is permitted to remain until the secretions have saturated the dressings, when they should be changed. Frequent dressing is meddlesome surgery. After suppuration occurs (and this will occur in all cases in which the tissues have been destroyed) more frequent dressing will be necessary.

I have tried picric acid on cases in which I had every reason to believe that the burns were of the same degree, the patients being side by side during an explosion of gas in the mines, and I am satisfied that there is more scar tissue following the use of picric acid than after the use of my own treatment. I am unable to explain the reason, but the facts are indisputable. Whether it is the incorporation of the acacia with the lead I am not prepared to say, but in my experiments I was looking for something to exclude the air. I do know that this treatment will relieve the inflammatory condition and prevent or modify the shock. This treatment is continued until the surface is covered by granulations, when a petrolatum dressing or powdered stearate of zinc is applied. If the surface is very extensive skin-grafting is resorted to at once, using the small grafts.

I have not had a case of lead poisoning for fifteen years following the use of this dressing, and here again I must attribute the reason to the acacia. In using the lead dressing without the acacia the symptoms of lead poisoning and lead colic will soon develop, especially in an extensive burn after the charred tissue has sloughed away.

The shock, which is usually severe after an extensive burn, or in a highly nervous person, is treated by the use of strychnine in 1/20- or 1/30-grain doses, hypodermically, every two or three hours; digitalis; and aromatic spirits of ammonium. Twelve to fifteen ounces of normal saline solution is given by hypodermoclysis every six to eight hours. Morphine sulphate in ¼-grain doses, repeated frequently, is used to relieve the pain and restlessness.

THE TREATMENT OF BURNS AND SCALDS EMPLOYED IN THE POTTSVILLE HOSPITAL.

BY J. HARRY SWAVING, M.D.,
Surgeon to the Miners' Hospital, Pottsville, Pa.

There are probably few conditions which the physician or surgeon is called upon to treat which require a more earnest effort on his part to relieve the intense suffering than do the cases of burns which we so often see in the various institutions throughout the coal regions. Hardly a day passes but one or more of these cases are brought to our institution, and it is a common occurrence to see one whole side of a ward filled with these poor fellows: burned either by steam, hot water, or from an explosion of mine gas, in which case they come in actual contact with the flames.

For the relief of these conditions there are many and various ways, and if you resort to your library, select a volume, turn to the subject and read, you will find a well-defined classification, namely, burns of the first, second, and third degree, together with a host of remedies with which to treat this condition.

These three classifications denote the severity or depth of the lesion, but do not signify the amount of area involved. It is not my intention, however, to speak at any length of these different degrees, nor to mention the symptoms, pathological conditions, or sequelæ, but simply to give you an outline of the local measures which best combat the pain and suffering which this class of patients experience.

No matter how severe the burns, the local treatment is precisely the same in all cases, and in brief is as follows:

The patient upon entrance to the hospital is placed in the accident ward, the temperature, pulse, and respiration ascertained, giving us the degree of shock, a condition which all of these cases experience to a greater or less degree. If the condition is found to be critical, the local treatment is now a secondary matter, all attention being paid to the patient's general condition, but just as soon as an improvement is noted local treatment is begun as follows:

Exposing only a portion of the body at one time, as a leg, arm, etc., the part is carefully washed with a warm solution of boracic acid, salt solution, or sterile water. I prefer the sterile water with tincture of green soap. By this most of the dirt can be removed, allowing you to inspect more carefully the field of operation.

The larger vesicles are incised, removing the tension, all destroyed or charred tissue is cut away, but I do not deem it wise to expose the healthy raw surface, as the pain seems to be more acute if this is done; the smaller vesicles are not disturbed.

The time consumed in caring for these smaller vesicles only adds to the discomfort of the patient, and I believe that the matter of exposure in these cases is of vital importance.

In most cases it seems necessary to again wash the part, and if done a second time I prefer warm sterile water, after which the patient is ready for the dressing.

After a number of years of experience, in which time I have had under my care several hundred of these cases, and during that time having used almost as many different preparations, I have found none so efficient, both for the comfort of the patient as well as for the convenience of the physician, as the picric acid dressing.

Having in hand a sufficient number of strips of sterile gauze about ten inches wide and of a convenient length, these are immersed in a saturated solution of picric acid, wrung out to the extent that no dripping occurs, and the part just cleansed is bandaged with from three to five layers of this gauze, according to the depth of the burn, and this in turn is covered with a goodly supply of cotton and the whole secured quite firmly with a roller bandage.

The above treatment has in my experience given by far the best results, and I would recommend it for the following reasons: The short space of time consumed in the dressing; the cleanliness of the dressing itself, enabling us to discard

those preparations of oil which are so objectionable for many reasons. The rapidity with which the pain is relieved by this method is certainly far greater to my mind than any other that I have used, and in large institutions, where expense is an item, there is in the course of a year a big saving over the preparations heralded by the different drug houses.

This first dressing is allowed to remain for from two to five days, according to the amount of sloughing and the general condition of the patient, when it is removed and another one put on, this being continued until all sloughing has ceased, when the treatment is changed to some ointment which the physician may choose. For this I usually prescribe the following:

Zinc ointment,
Bismuth formic iodide ointment,
Petrolatum, equal parts.

The matter of a healing ointment is not of so much importance, and many other combinations may be equally as good.

In the general treatment, to combat shock, stimulants such as ammonia, strychnine, and alcohol, with warm coverings, hot bottles, etc., should be used. Morphine must be used cautiously, and later fluid nourishment, with regulation of the bowels, cutaneous and renal secretions. Iron, quinine, and treatment calculated to support the system under the drain of prolonged suppuration are useful.

Where destruction of tissue has occurred to a marked degree, splints, traction, and position must be employed to prevent or overcome cicatricial contractions, while early attention must be paid to the condition of the granulations, with free skin-grafting, the method employed being a matter of choice.

In a recent tour of the hospitals abroad I was greatly interested in their manner of treating these burn cases, and I found one method which I thought very unique, and where circumstances permit would, I believe, give even better results than any method now in vogue in this country. It consists in immersing the patient in a tub of water, remaining there until all sloughing has ceased. The water is changed from day to day, or oftener if required, and every day the patient is taken out and the sloughing tissue removed. By this method the patient's suffering is reduced to a minimum, and the ward is rid of that odor so objectionable wherever you find these cases. I believe this to be an improvement over any method I have seen, and one well worth trying.

THE AURAL AND LARYNGEAL COMPLICATIONS OF TYPHOID FEVER.[1]

BY LEWIS S. SOMERS, M.D., PHILADELPHIA, PA.

While the upper respiratory tract, including the ear, is involved in a considerable number of typhoid patients, the majority of such affections are of trivial moment and are amenable to purely medical treatment, as even ulcerations of the mucosa heal with but little difficulty and aural complications usually terminate in resolution without seriously damaging the hearing, or endangering life. It is not, however, these cases that it is desired to consider here, but that smaller number in which the aural, or laryngeal, lesion requires surgical treatment, and often presents a serious and not infrequently fatal issue, either during the course of typhoid fever or during convalescence. As these complications necessitating surgical treatment occur in the ear and larynx, it is these two organs alone that it is desired to consider here, and no mention will therefore be made of the non-surgical complications, or of the changes so frequently found in the pharynx and nasal chambers.

Considering the larynx first, for here the lesions may seriously endanger life, it will be found in the majority of typhoid patients presenting laryngeal complications that ulceration when present is superficial, more or less limited in area, and heals without further annoyance. The frequency with

[1]Read before the North Branch of the Philadelphia County Medical Society, Feb. 19, 1907.

which ulceration occurs varies from 1.5 to 29 per cent, depending on the virulency of the particular epidemic; Kanthack in 61 autopsies finding this condition in 26 per cent. This includes, however, all forms of ulceration, but while the superficial ulcers are frequent, the deep variety leading to serious cartilage changes is more rare, although if careful examination would be made of all patients without waiting for laryngeal symptoms to develop, the frequency of such complications would undoubtedly be more fully appreciated.

Ulceration mostly takes place at the height of the febrile disorder, or in the later stages, at a time when the intestinal ulcers are undergoing exfoliation and cicatrization, while edema as a primary symptom, which is almost invariably fatal, may occur as early as the second week, or not until convalescence is progressing. These lesions are at first characterized by infiltration, and then by breaking down of the inflammatory tissue and ulceration; the ulcers being most frequently found on the under surface of the epiglottis, the inner surface of the arytenoid eminences, and on the ventricular bands, while of the cartilages the cricoid is most frequently involved, the thyroid cartilage rarely being affected by necrosis.

Even the serious destructive lesions are usually preceded by the superficial erosion which may rapidly penetrate the deeper structures, and involving the perichondrium cause extensive destruction of the cartilage. Especially does this perichondritis involve the cricoid and arytenoid cartilages, the former being destroyed in great part by the purulent process, while the latter may be exfoliated in their entirety. The ulcer on the posterior internal wall of the larynx is deep and is often accompanied with extensive edema of the surrounding structures, or of the entire laryngeal interior, so that a most serious complication develops. The epiglottis is less frequently affected, as extensive destruction is rare, although small portions may be destroyed, or as much as half of it may become necrosed.

The cause of the serious ulcerative and necrotic lesions in the larynx is generally the result of secondary infection by pus cocci, the typhoid fever predisposing to lymphoid destruction and the laryngeal mucosa being readily susceptible to injurious influences, so that a portal of entry is developed for the entrance of the various pus organisms, although in some cases the infection is undoubtedly due to the specific bacillus of the disease. The necrotic ulcers seem to be analogous to the intestinal lymphoid lesions, and this similarity is further enhanced by the primary laryngeal lesions being located in areas where aggregations of lymphoid follicles are gathered, such as the posterior wall, the attachment of the vocal bands at the arytenoid cartilages, and at various sites on the epiglottis, all these sites corresponding to the ulcerated areas. One cartilage may be independently affected, such as the cricoid, or several may be involved at the same time, depending on the extent of the primary ulceration and the subsequent perichondritis, as in the majority of cases the destruction of cartilage is secondary to the ulceration of the mucosa; but in rare instances perichondritis with the formation of an abscess may develop without ulceration, analogous to that occurring in the ribs, and in such cases the typhoid bacillus undoubtedly plays the important rôle.

It must also be remembered that serious complications may take place as the result of changes in adjacent organs, dyspnea from stenosis and edema of the larynx under such circumstances being dependent upon pressure symptoms arising from acute inflammation, or abscess formation in the thyroid gland. It is not infrequently characteristic of these complications that serious destructive changes may be taking place, while the subjective symptoms are of apparently little moment, and especially is this the case in individuals who are in a semistuporous condition. Later on local pain may be complained of; if there is much swelling of the posterior wall there will be difficulty in swallowing, with, at times, aspiration of food into the larynx; cough will occur, especially when the patient attempts to speak, and hoarseness or complete loss of voice may be prominent.

At times symptoms of acute edema will develop so suddenly and without warning that fatal dyspnea may ensue before proper treatment can be obtained, so that in cases showing laryngeal involvement of any grade careful watch should be maintained, especially if the patient is at all stuporous, while should increased respiration with cyanosis and dyspnea be observed, the larynx should always be examined for these complications. Usually the laryngeal changes remain localized in this organ, but in rare instances purulent inflammation may spread to the mediastinum with pus infiltration and the development of emphysema, or as the result of extensive perichondritis the tissues of the neck may become involved in secondary suppuration and gangrene. Of those who recover from these serious lesions, a certain number will suffer from cicatricial stenosis of the larynx with the development of adhesions, or serious defects necessitating the wearing of a tube for a time at least, and in severe cicatricial deformities a permanent cannula may be necessary.

When perichondritis of the larynx develops during typhoid fever and becomes established, it is impossible to arrest it, and the surgeon must be prepared to do a tracheotomy should the breathing be seriously interfered with, while when pus has formed it should be evacuated after a preliminary tracheotomy, unless the pus can be reached through an external incision, when this is not necessary. If edema is localized and not of a severe type, scarification of the affected areas will usually produce relief, but when it represents one of the symptoms of the underlying perichondritis and necrosis of cartilage, tracheotomy will be necessary, although the dangers will not then be entirely eliminated, as pus formation and exfoliation of cartilage will still demand constant care; while as long as the cartilage remains necrotic and the perichondritis is in an active state, it will be necessary for the patient to wear a cannula, and this will have to be retained until all active changes in the larynx have ceased and a free breathway is assured.

As the middle ear with its adnexa constitutes an essential portion of the upper respiratory tract, so far as continuity of structure is concerned, it is evident that this portion of the auditory apparatus would be frequently involved during the course of typhoid fever, and while serious changes in the ear are less common than in other infectious diseases, yet it is the organ of special sense most frequently involved in this affection. Clinically, in two to four per cent of cases, the ear is involved to a sufficient degree to call for more or less active treatment, but undoubtedly a larger number of patients present aural changes of various kinds that are not discovered, or are of such minor grades of inflammation that no attention is called to them.

As a rule the ear complications are the result of an extension of inflammation through the Eustachian tube from the nasopharynx, and this may resolve itself into simple congestion, catarrhal exudation without perforation of the membrana tympani, or into purulent otitis media with or without involvement of the mastoid process and its various complications, such as sinus thrombosis, periostitis, and caries of the petrous bone, facial paralysis, or the cranial contents may be involved. In patients with marked stupor it is advisable for these reasons to carefully examine the ears at frequent intervals, in order that such complications be recognized early, and especially is this the case when the condition of the patient is such that he is not liable to complain on account of his profound stupor, such as is seen in severe types of typhoid. When purulent otitis continues during convalescence, secondary meningeal or sinus complications may develop at this late period, and the presence of headache during convalescence, especially in an individual who has not been subject to this affection previously, should cause renewed investigation of the aural suppuration, as such a symptom may be strongly suggestive of some intracranial mischief.

As far as the external ear and auditory canal are concerned, it is rare that pathological changes take place here as the result of the systemic disease; furunculosis may occur either independently or as part of a

general dermal infection, especially during convalescence. More serious is the periostitis of the external canal caused by the extension of inflammation from an abscess of the parotid gland, with the escape of pus through the cartilaginous canal.

Much more frequent and important are the inflammations of the middle ear, and of these tympanic suppuration only will be considered here as presenting a purely surgical complication. This usually develops during the fourth or fifth week of the typhoid fever, and if the pus is not evacuated early a large perforation usually forms in the posterior segment of the tympanic membrane, preceded by severe pain and tinnitus. Generally the suppuration is of longer duration than that due to other causes, and the hearing seems to be more profoundly impaired as the result of accompanying internal ear changes, but at the same time the tendency toward repair and cessation of the suppuration is better than that occurring in the course of other infectious diseases, and cicatrization of the perforation usually takes place with restoration to normal of all, or a greater part, of the auditory acuity.

A characteristic of suppurative otitis during typhoid fever is the tendency to the early development of mastoid abscess; the inflammation may at times involve the mastoid process simultaneously with the middle-ear suppuration, and while the symptoms are the same as in mastoiditis from other causes, yet marked tenderness to pressure over the mastoid process is an early sign which is usually out of proportion to the objective changes in the middle ear. Not only may the disease of the bone accompany the middle-ear suppuration, but in some cases it may even precede it, resembling in many respects an acute osteomyelitis, which would seem to indicate its relation to the general disease as a direct complication. In such cases the temporal bone may be extensively involved and large sequestra form, unless the condition is recognized early and promptly relieved by operation.

The treatment of these aural conditions complicating typhoid fever does not differ in any way from that due to other causes, but it is essential that pus be evacuated early, and especially is this so when there are indications of fluid confined in the middle ear. Early and free paracentesis of the membrana tympani with ample drainage will prevent in many cases the development of serious mastoid involvement, and when the latter is the seat of pathologic change one should not delay opening it and removing all the diseased tissues until serious symptoms develop, as extensive osseous destruction may be taking place with but minor subjective symptoms, but early and radical operative measures are indicated as soon as the diagnosis has been made.

THE SUCCESSFUL TREATMENT OF PULMONARY PHTHISIS IN GENERAL PRACTICE.

BY KARL VON RUCK, M.D., ASHEVILLE, N. C.

In almost every communication on the treatment of pulmonary tuberculosis in which the curability of the disease is dwelt upon, the fact is set forth that an early diagnosis is the first condition and that this must be made by physicians in general practice, who, as a rule, are consulted at a time when the symptoms are not yet developed to a degree that the affection is of easy recognition; and therefore when the disease is in the early curable stage.

In published papers on the diagnosis of the early stages the same facts are insisted upon, and every sign and symptom has been described and analyzed for the general practitioner's benefit so often, and with such uniformity, that there is little to be added, and the general practitioner, if he has read and studied one in a hundred of these appeals for his coöperation, must be presumed to know all about the importance and the mode of examination which are to preserve him from error in dealing with the class of cases under consideration.

Those of us who are specially interested in and devote ourselves to the treatment of the disease naturally recur to the cause which so often stands in the way of good and permanent results—*i.e.*, the serious advanced stages of cases coming under our care; my own admissions show only about 18 per cent of early-stage cases. We naturally want the patients sent to us when we have the best opportunity to afford them lasting benefit, be that from treatment upon one plan or another in private practice or in institutions especially equipped for this purpose.

While this is all natural, we should not forget that the number of patients able to take full advantage of the early diagnosis, even when made in a curable period of their illness, is relatively very small. The great majority of patients are for one reason or another obliged to remain at home and do the best they can there, often without being in a position to give up their environment, or their occupation, that presumably has had a part in the development of the disease or in the outbreak of subjective symptoms, until obliged to do so by physical inability to continue.

These patients remain under the care of their family physicians, who must improvise and follow the best methods they can, and these consist at the present time in as good feeding as the patients' circumstances afford, in securing as much life in the open air as possible, and in treatment of symptoms as they arise. Under such a course the symptoms may ameliorate or disappear for a time, but permanent relief, or even latency for a number of years, is not frequent.

The obstinacy of the disease, its progression, or the recurrence of active symptoms frequently leads later to sacrifices by family and friends, as a rule now, to save a life evidently jeopardized. Such sacrifices when determined upon must still be of the least possible degree, since many times they imply borrowing of money, the sale or mortgaging of a home, or expenditure of the accumulated savings of parents or other members of the family or the contribution of their earnings, that the one sick may have improved advantages of climate or of the services of a specialist, or both.

Climate is the usual object of the sacrifices spoken of, and though often inadequate a certain degree of benefit is so commonly observed in the beginning of the disease that both the laity and the profession consider it most important. For more than this advantage the means at hand are often insufficient, and professional care is presumed not necessary unless when reverses and complications occur.

It is at such junctures that the specialist sees this class of patients and often finds the case incurable, and it is natural that cumulative experiences of this kind incline him to write and publish another appeal to the general practitioner to make an early diagnosis and send his patients in a curable stage.

This state of affairs must continue until the general practitioner can himself successfully treat his patients. His early diagnosis, although made much more frequently than commonly supposed, avails but little from a therapeutic point of view, so long as there is not also an early successful treatment in his hands that can go with it for this class of "home cases," which constitute perhaps 80 per cent or more of the morbidity of phthisis.

The hope that specific remedies might be used by the profession at large was quickly suppressed when Koch first introduced tuberculin, owing to its use in unsuitable cases and in doses that too frequently proved excessive and injurious. Its danger of severe reactions and unavoidable accidents, of which there was made so much in the beginning, have prevented its general application even by specialists and institutions until more recently, when exact methods and more reliable preparations have tended to reëstablish its value, and have led to a more extensive and also to a more conservative use. That a limited amount of danger can nevertheless still be shown even in the most careful and best trained hands is however true, and that such a danger would be realized more often in cases that have to be treated in general

practice without the necessary supervision and control is highly probable.

In my own study of the subject I have earnestly endeavored to find a preparation to which no such danger attaches, and which should give satisfactory results in the hands of the general practitioner as well as in my own.

In my own use of specific remedies I have, the same as others, endeavored to find a preparation which should be free from all danger, even in the hands of the general practitioner, and which should possess more marked therapeutic efficiency. My use of antiphthisin, tuberculocidin, purified tuberculin, and of other modifications prior to 1897, proved on the whole more satisfactory as concerns safety, but in clinical value they were apparently not materially superior to the old tuberculin.

Upon the consideration that the object of the specific treatment was to increase the specific resistance of the organism against the bacillus, and that for this purpose the bacillary substance itself was essential, the latter has been employed by me since, in the form of a watery extract which contains the soluble proteins of tubercle bacilli. To my experience in regard to safety and efficiency of this preparation, I have frequently referred in the reports from the Winyah Sanitarium; and to the one published in 1901 I appended the results of an inquiry concerning its safety and value in the hands of others, who had treated a considerable number of cases.

Another such inquiry has been made during the last six months, the results of which are considered fully in a pamphlet now in course of printing entitled, "A Clinical Study of 293 Cases of Pulmonary Tuberculosis Treated in the Winyah Sanitarium from January 1, 1905, to December, 1906, with a Consideration of the Value of Specific Medication."

In the general part of this study are included 1166 cases treated in the Winyah Sanitarium since 1897, together with 2183 cases reported to me, all of which have been treated with the *watery extract of tubercle bacilli,* in connection with the usual methods —making a total of 3349 cases. Of the 2183 cases treated by others, 921 were treated in institutions, and these together with my own material of 1166 cases show that institutions obtained on the whole better results than were obtained in private practice, which we would naturally expect. Thus of 2087 cases treated in institutions there have apparently recovered 56.1 per cent, while failures to obtain improvement are recorded in 15.7 per cent. Of 1262 cases treated in private practice there have apparently recovered 44.3 per cent, and failures are recorded in 18.8 per cent.

The stages of the disease were nearly uniformly distributed in institutions, the early-stage cases amounting to 24 per cent of all cases treated. In private practice the early-stage cases constitute about 33.3 per cent, which difference is not to be lost sight of in comparing the results from institutions with those of general practice.

Among the physicians who reported their results to me were sixty-eight who treated their cases at home in localities having no special climatic advantages. Their material comprised a class of patients who for one reason or other could not or did not leave their places of residence, and as a rule remained under the care of the family physicians. It is their experience that particularly interests the latter, and as we shall see their reported results are full of encouragement. They treated altogether 423 cases of pulmonary phthisis, of which 153, or 37.5 per cent, were stated to have been in the first stage, 124 in the second, and 146 in the far-advanced stages of the disease.

Their reported results by stages are as follows:

Early stage, 153 cases: Apparently recovered 130, or 85 per cent; disease arrested 14, or 9.2 per cent; greatly improved 7, or 4.6 per cent; improved 2, or 1.2 per cent; failed, none.

Second stage, 124 cases: Apparently recovered 56, or 45.1 per cent; disease arrested 24, or 19.4 per cent; greatly improved 25, or 20.1 per cent; improved 3, or 2.4 per cent; failed 16, or 13 per cent.

Advanced stage, 146 cases: Apparently

recovered 19, or 13 per cent; disease arrested 14, or 9.6 per cent; greatly improved 21, or 14.4 per cent; improved 21, or 14.4 per cent; failed 71, or 48.6 per cent.

For all stages the reported results are: Apparently cured 205, or 48.5 per cent; disease arrested and greatly improved 105, or 24.8 per cent; improved 26, or 6.1 per cent; failed 87, or 20.6 per cent.

In answer to the question of safety and value of the remedy there has been a most uniform agreement, not a single instance of harmful influence, even of a temporary character, having been mentioned, and the value which was uniformly attested appears even without such testimony in the attained results.

A number of the cases had other complications of a tuberculous nature, all of which are given in detail in the full statistical review and tables in the publication referred to. Quite a number of the cases were treated from two to nine years ago. The reporting physicians being in the same locality have been able to watch their progress, and permanency has been claimed in practically all cases which were dismissed as cured, and in a number of those in which the disease was arrested or improved on the discontinuance of treatment.

The remarkable and important feature of enduring results under specific medication is further borne out by the statistics of patients of the Winyah Sanitarium discharged two to ten years ago. A tabulation of 602 cases which had obtained a clinical result while under treatment, and which have been traced, shows that 320 out of 400 patients discharged as apparently cured claimed to have continued in good health, and of the entire 602 cases traced 414 had not relapsed from their condition on discharge, showing permanency for all stages for from two to ten years in 68.8 per cent of the traced cases.

I concede to the observant reader that the number of cases treated by general practitioners at home is comparatively small, but I would suggest that the number of independent observers is comparatively large and that they show a creditable approach to the results obtained by those who have had greater advantages in one way or another. The larger statistics which deal with 3349 cases would justify the belief that further experience will not materially change their average results.

A combination of specific treatment with the usual methods in home treatment of cases appears to me likely to give even better prospects than are indicated above, because the patients are likely to be treated in an earlier stage, which is already apparent from the fact that among the 423 cases treated at home were 153, or 37.5 per cent, in the early stage, whereas in the remaining 2926 cases this was the case in only 27.4 per cent. This difference I believe will grow larger in time, as increasing success will stimulate interest, and the percentage of cured cases will therefore increase.

The scope of the present paper is not calculated to be a detailed analysis; this will be found in the fuller data contained in the study referred to, which gives the name and address of each physician, with the number of cases treated in the different stages and the results he reports in phthisis and other forms of tuberculosis. It also considers fully the question of permanency of my work and of that reported by others, together with the results of blood studies in the light of the development of specific immune substances under the application of specific remedies.

My object here has been to call attention to what may be accomplished in the treatment of phthisis at home, and to show that the general practitioner can improve his results to a degree that in the earlier stages at least permanent recoveries will become the rule instead of rare exceptions, and under conditions which differ in no way from the ordinary, either in special facilities, climate, or expert training and experience.

EDITORIAL.

THE HYPODERMIC USE OF QUININE.

Physicians who practice in northern zones and who rarely if ever come in contact with the malignant or pernicious forms of malarial infection have little conception of the gravity of the illness in patients who are so infected, and fail to appreciate how essential it is to overcome the malarial parasite by the immediate introduction into the blood of adequate doses of the specific remedy, quinine. Because of the fact that sulphate of quinine, which is the salt which has been most commonly employed, is so insoluble and so prone to produce abscess, the hypodermic use of this drug in urgent cases has not met with the favor which it deserves. The hydrochloride of quinine, the bimuriate of quinine and urea, and the hydrobromide of quinine are, however, salts which are so soluble that they do not necessitate the injection of very large quantities of fluid. They seem to be less irritating and they more rarely cause abscess.

We read with a good deal of interest an interesting series of letters in the *Indian Medical Gazette* for March, 1907, contributed by surgeons in the Indian Medical Service, in which they give us the methods and results which they have pursued. One of these, Dr. L. B. Scott, states that he has employed acidified hydrochloride of quinine, dissolved in distilled water in the strength of 1 to 1 or 1 to 2, and that the dose which he is in the habit of giving is 10 grains, which can therefore be readily contained in the barrel of an ordinary 20-minim hypodermic syringe. Occasionally he has used sulphate of quinine, aiding its solution by the addition of 3 grains of tartaric acid to each 10 grains of the salt in 20 minims of water. Sometimes as much as 5 grains of tartaric acid is employed. When large doses are needed, he injects one barrelful, then separates the needle and barrel without removing the needle from the tissues, fills the barrel, and injects a second dose. In some instances, however, tetanus has followed the injection of quinine, and therefore he insists upon the necessity of absolute asepsis both as regards the patient's skin and the needle and syringe. The quinine should be given intramuscularly for the purpose of preventing recurring ague attacks and also to obviate relapse, and he states that this method has put a stop to recurrent ague when doses by the mouth have failed. In one instance he carried out a series of experiments upon 74 successive sepoys coming to a regimental hospital with malarial fever. He treated alternate cases with 10 grains, given twice daily by the mouth, and the other cases by intramuscular injection. In some instances the doses were as small as 2 to 5 grains, but as a rule he gave as much as 10 grains by the needle, or, to be more accurate, 43 per cent of the injections were of 3 to 5 grains and 57 per cent were 8 to 10 grains. Each case received only one injection a day. Taking the average number of days of fever after commencement of treatment, although less than half the dose was used by the intramuscular method the result was distinctly in favor of the use of quinine by the needle, although the time gained was not very noteworthy. Because the drug is so slowly absorbed when given intramuscularly in some cases, he thinks that this method may be advantageous in that it provides a reservoir of quinine which is continuously absorbed and so maintains an antimalarial influence. Further, he states that the planters of Cachar very much favor the injection method as against the oral method.

Surgeon Moncrieff has used a large number of the different salts of quinine by the hypodermic needle, and regards it as a valuable means of combating this infection. The salt which he prefers is the acid hydrobromide, which when dissolved makes a solution of the strength of 1 grain to 7½

minims of water, which quantity of water is excessive, but is used with the deliberate purpose of permitting thorough sterilization by boiling without risk of precipitating the salt. Contrary to what one might expect, he asserts that quinine is more easily given to infants by hypodermic injection than by the mouth, provided that the needle is sharp and of small caliber; and further that these requirements are met by the fine Schimmel needles sold by Parke, Davis & Co. He agrees with Scott in thinking that the hypodermic injection method is not by any means the most rapid way of getting quinine into the system. At one time he considered it the quickest method which could be used next to the intravenous injection, but now he believes that the quinine is so slowly absorbed when given hypodermically that it is not of very great value when the symptoms are urgent. Indeed, he believes that the administration of the drug by the mouth may be more prompt in its effect. He favors the assertion of Holt, of New York, that relatively much larger doses of quinine are required for children than for adults, and recommends that infants of a year should usually receive 8 to 12 grains of the sulphate, or 10 to 14 grains of the bisulphate, daily. He asserts that Holt occasionally gives double this quantity.

This symposium also contains two more letters upon the same subject by East Indian surgeons. Dr. Cook states that he failed to get rid of a severe malarial infection in his own case until he consulted Sir Patrick Manson, who advised the hypodermic use of acid bichloride of quinine, ten grains being injected into the gluteal muscles every night for a week, and effervescing tablets of magnesium sulphate every morning by the mouth. These injections left some soreness and stiffness for a number of days, but were efficacious in curing the fever when the use of the drug by the mouth failed.

Finally, we have the communication of Dr. Williamson, of Bhandara, in which he strongly recommends the bihydrochloride, of which one grain will dissolve in less than a minim of water. He injects 10 to 15 drops of this fluid into one of the larger muscles, such as the biceps or gluteus, under the strictest antiseptic precautions, sterilizing his syringe with boiling olive oil or vaselin before using it, because the temperature of boiling oil is much higher than that of boiling water. He thinks that there is no danger of tetanus if boiling oil is used, his belief being based on his experience in giving many hundreds of intramuscular injections of quinine.

Doubtless many of our readers in the southern portions of the United States, and in tropical countries, will consider that these various communications are of very great practical value, and we have no doubt that the favorable experience of these East Indian surgeons will do much toward popularizing this method of combating malarial disease in suitable cases.

GOOD FOR ONE CONDITION BUT BAD FOR ANOTHER.

We have been somewhat interested by a series of letters which have appeared recently in the *British Medical Journal* in regard to the use of calcium salts as cardiac tonics in pneumonia and heart disease. The subject was first brought forward, at least in the present discussion, by a letter written by Sir Lauder Brunton, in which he advised not only the free use of oxygen and strychnine in many cases of pneumonia, but also the use of calcium chloride, chiefly with the object of obtaining the well-known stimulant effect of this salt upon the cardiac muscle. Sir Lauder Brunton was promptly attacked by Sir James Barr, of Liverpool, who claimed that his suggestion concerning this plan of treatment was by no means original, and that he (Barr) had employed this method a long time before Sir Lauder had published his suggestions concerning it. Sir Lauder Brunton returns to the fray with the statement that he made his contribution solely because he had found these methods of value, that he thought that a certain number of lives could be saved by their use, and as far as priority was concerned he was most happy to recognize the

early use of these substances by Sir James, provided it could be proved that he had employed them at an earlier period. He emphasizes the fact, however, that he recommended calcium chloride as a cardiac tonic, and not because the urine contains a small quantity of chlorides in pneumonia.

Into the debate Dr. Ewart, who is well known to many American physicians, next entered, and sends a letter in which he points out that while it may be correct to consider that calcium chloride exercises a stimulant effect upon the heart muscle, it must not be forgotten, on the other hand, that many practitioners are now employing this salt for the purpose of increasing the coagulability of the blood, and that if it is freely used as advocated by Sir Lauder Brunton and Sir James Barr that most dreaded complication of croupous pneumonia (heart clot) may be precipitated upon the patient. He therefore emphasizes the fact that there is danger in this method as well as value, and that the chief object of the physician should be to maintain, if possible, a steady rate of elimination of the infecting agents and of their toxins, asserting that calcium chloride can have no place in our treatment of the early stages because it will probably increase the exudate within the alveoli. He insists that the more urgent duty of relieving local congestion by leeches, the use of cardiac stimulation, and an endeavor to stimulate excretion in every way, should be the plan of campaign. Finally, he urges, instead of using drugs which will increase the coagulability of the blood, that we employ the citrate and iodide of potassium to diminish the coagulability of the blood, and for the purpose of ultimately aiding in the absorption of the exudate.

THE ALCOHOL QUESTION.

The question as to the moral and medical status of alcohol is still being thrashed out by medical and lay contributors in scientific and popular periodicals, and the thrashing process will probably persist as long as this drug continues to be employed by the laity in beverages. With the moral aspect of the employment of alcohol in cases of disease we have nothing to do, save that it is the duty of the physician to recollect that its careless administration, like the careless administration of all potent drugs, is capable of doing harm, and furthermore is capable in certain persons of developing a habit or appetite, the gratification of which only too frequently leads to disaster for the individual, and those dependent upon him for their existence and happiness.

In this connection we have read with considerable interest an article by Crosby which is published in the *Journal of the Minnesota State Medical Association* of April 15, 1907, in which he does not bring forward any new evidence of his own, but in which he quotes from a considerable number of writers upon this subject in an endeavor to show the attitude of the medical profession in regard to the employment of this drug as a medicine. We have also read with interest an editorial item in *Harper's Weekly* of April 20, 1907, and it is because these two articles in one sense strike a key-note that we call attention to them at this time. There can be no doubt that Emerson was right when he stated that "the reason why artists, poets, and musicians love wine" and other narcotics is because they "add to their normal powers" and "transmute life's leaden metal into gold;" and, again, that "it helps a man to escape the custody of that body in which he is pent up, and that jail yard of individual relations in which he is enclosed." Crosby believes that the evil results of its prescription are incalculably greater than any possible good derived from its use, and quotes a number of clinicians who are using it less and less in their practice.

There can be no doubt whatever that alcohol as a therapeutic agent has been greatly abused in the past, and that many cases of chronic alcoholism have developed from its use as a medicament, but these are not reasons why physicians should refuse to employ it properly and cautiously in certain cases in which clinical experience shows that it is really indicated. We are of the

opinion that, bearing in mind its evil influences and the possibility of the development of a habit, physicians are deliberately failing to recognize a remedial agent of considerable value if with one stroke of the hand they remove it from their materia medica list.

Harper's Weekly, recognizing the everlasting condemnation which is heaped upon alcohol and the equally everlasting persistency in its use by the greater portion of the human race, quotes from a series of contributions made to the London *Lancet* in which it is asserted that alcohol is a trustworthy restorative, and that as an article of diet the moderate use of alcoholic beverages is for adults usually beneficial. This opinion also seems to have found support by the investigations of the *New York Evening Post,* the editor of which submitted these statements to medical practitioners in New York, who, it seems to us, "hit the nail on the head" when they stated that alcohol in limited quantities is good for some people but not for others. As *Harper's Weekly* remarks, "most intelligent observers have noticed this fact for themselves." It is therefore evident that both doctors and laity regard the use of alcohol as a substance which is to be feared, and used with watchfulness and caution. "Harper's" further states that the idea that alcohol is "good for you" is pretty well exploded among people of common sense, but that the idea that it is invariably "bad for you," no matter who you are or how old, does not win its way either in theory or practice. In other words, to quote again from this same periodical, "whether it is good or bad, helpful or hurtful, depends on who and what you are, what age, what temperament, how employed, how fed, and also on what you drink and when and how you drink it." These remarks are essentially sane, and while they are made in connection with the question of the employment of alcohol by the well, they apply with equal force to the use of this drug in those who are ill.

Carefully balanced, well-considered statements of this character do far more good with the vast mass of humanity in governing their use of this drug than bitter denunciation, which often serves to stir up antagonism and destroy confidence in statements which, in some respects, are worthy of credence.

SURGERY OF THE NERVOUS SYSTEM.

The original and illuminating quality of all of Murphy's writings on surgical topics makes his last contribution on Neurological Surgery, profusely and beautifully illustrated (*Surgery, Gynecology, and Obstetrics* for April, 1907), of world-wide interest and importance. Indeed, this is a brochure covering, from the standpoint of the clinician, surgery of the spinal cord and the peripheral nerves. His paper opens with a brief but singularly clear summary of the anatomy of the cord. As to regeneration of the cord Murphy holds that this has never been observed and will not take place. A transverse hemisection of the cord has, however, been followed by restoration of function without the appearance of new fibers in the cicatrix, due to the impulse traveling along the fibers in the uninjured half of the cord, this being in full accord with Weissman's dictum that "Ganglionic nerve-cells, once destroyed in the gray matter of the cord, are never reproduced or replaced." Murphy adds that ganglionic cell-bodies and aneurilemmic axones are never functionally reproduced. This includes all ganglionic cells, the axones of nerves of special sense, and the axones of the white column of the cord.

Division of the anterior root is followed by degeneration of the entire peripheral segment and a small portion of the central segment, generally not extending beyond the first root of Ranvier. The gray matter of the anterior ganglionic cells suffers more or less change. If the ends of the divided motor root are united, restoration of function takes place. This is in strict accordance with the histology and minute anatomy; the axones of the motor nerves are neurilemmic from the time they leave the cord, and should therefore regenerate com-

pletely if accurate aseptic apposition is made. If the motor fiber is divided within the spinal cord restoration never takes place. If the posterior root be divided between the ganglion and the spinal cord the fibers degenerate, and this degeneration affects the cord at the level of division. There is also an ascending degeneration.

In considering trauma of the spinal cord Murphy notes that after contusion there may be absence of signs of an initial injury, till a time varying from a few days to several weeks, when traumatic reaction may set in, and the patient may develop complete paraplegia of both motion and sensation. This may be followed by complete restoration of function without surgical intervention after a period even as long as fourteen months. Such cases are instances of zonal paralysis without division of the cord or axones and are due to an inflammatory condition.

By concussion Murphy implies an impairment or loss of function of the spinal cord due to injury which is not sufficient to produce gross anatomic changes. He accepts as spinal concussion cases other than those with symptoms of pronounced zonal hyperesthesia or anesthesia and with a zone of diminished reflex, or paralysis partial or complete. Hemorrhage may produce identical symptoms; hence diagnosis at first may be quite impossible. Later it will be suggested by a rapid disappearance of all the symptoms in cases of pure concussion.

Murphy states he has had a number of cases of injury of the spine in which physical examination did not reveal evidence of dislocation or fractures, although the patients developed marked paralytic symptoms. In all these cases perfect recovery took place in six to twenty months.

Of punctured wounds of the cord Murphy notes that Wagner-Stolper has collected 86 cases. Of these, more than half occupy the cervical portion and the remainder the upper dorsal region. The clinical picture of punctured wounds of the cord is that of a hemisection lesion. The symptoms appear immediately after the injury, and the course is generally an aseptic one. The mortality was 20 per cent. Very few of the cases recovered completely.

Treatment lies in keeping the external wound clean; nor is operation ever indicated except when infection of the spinal canal has occurred, or when there is compression from hemorrhage. The latter if manifested early can be relieved by puncture with a large needle. Since the divided axones do not regenerate, as they have no neurilemma, suture of the severed segments is not only useless but adds to the danger. Such paralysis as results from effusion or traumatic zonal inflammation will subside without operation. Therefore laminectomy is contraindicated.

Effusion of blood may be extradural, subdural, or within the cord. The subdural hemorrhage, or hematorrhachis, is characterized by gradual and progressive onset of paraplegia after injury, attended by violent pain along the nerves and occasionally by violent muscular spasms. The symptoms increase in severity up to the fourth day and then gradually disappear. The best test for hemorrhage is lumbar puncture. This hemorrhage is occasionally non-traumatic in origin, Janeway having reported a case of spontaneous subarachnoid hemorrhage in a hemophilic. This patient after having recovered from an attack of influenza suddenly fell to the floor. The autopsy revealed extensive hemorrhage in the subarachnoid space up to the middle cervical region; there was also some blood between the dura and the arachnoid.

Hemorrhage into the substance of the cord, hematomyelia, is commonly noted in the region of the fourth, fifth, and sixth cervical vertebræ. It is customarily due to overflexion of the spine. When bleeding is confined to the gray substance only there is wasting of muscle and anesthesia of the upper limb; also zonal absence of reflexes. If the white substance be involved, we have paraplegia below the level of the lesion. Prognosis must be guarded in cases of hematomyelia. Even though recovery occur there is always a weakness left, due to destruction of the ganglion cells of the motor neurones at the point of hemorrhage.

Fracture of the spinal cord is commonest in the dorsolumbar region. When it is followed by immediate purulent, uniformly transverse, and complete paralysis of motion and sensation there is no hope of recovery with or without operation, as the spinal cord is divided. Surgical intervention is of value only where the fragments press upon the cord without having caused complete division. Fracture with a contusion rarely gives immediate and complete palsy. Irregularities of paralysis indicate that some columns of the cord are still intact; usually this paralysis comes on hours, days, or weeks after the trauma, and is accompanied by abolished reflexes in this zone. Compression may be associated with contusion, under which circumstance the differential diagnosis is practically impossible without laminectomy, which is to be avoided, since a contused cord suffers additional insult by every operation, no matter how delicately performed. Where, however, compression is suspected on account of great bone displacement, the operation is advisable. Partial division of the cord gives a symptom-complex resembling contusion, there being an irregularity in the transverse line of paralysis, and either sensation or motion may be present to a limited degree. Murphy quotes Walton to the effect that "we have no symptoms from which we can assert from the outset that the cord is crushed beyond at least a certain degree of repair. It has been said that where there is complete loss of sensation, motion, and patellar reflexes the cord is completely crushed, and, consequently, recovery cannot be expected."

Murphy particularly condemns, in fractures with division of the cord, operation with suture of the cord as being absolutely worthless.

When the fracture occurs in or below the twelfth dorsal the treatment and prognosis are entirely altered. The cauda equina is made up of essentially peripheral nerve fasciculi, and not of spinal cord fasciculi, as the axones of the motor roots in this portion have their ganglion trophic cells above this level in the conus, and the motor axones in the cauda are covered with the sheath of Schwann, or neurilemma. These nerves have the same power of regeneration as the peripheral motor axones. Hence accurate suture and exact approximation of the ends of the divided caudal fasciculi under aseptic conditions are distinctly indicated.

Murphy states that it is easy to determine which are the right and left fasciculi by a mild faradic current up to the seventh day after the injury. He strongly urges that every case of fracture, stab, or bullet wound, where the cauda has been supposedly divided, should be exposed and suture of the fasciculi undertaken, the individual points of suture to be surrounded by egg membrane to lessen connective-tissue interposition.

Murphy quotes Prewett's collection of 49 cases of gunshot injuries treated since the antiseptic era. He urges from his own standpoint that in bullet wounds involving the spinal cord itself operation is contraindicated, unless the bullet remains within the spinal canal and compresses the cord. If the cord be compressed by accumulated blood within the meninges, a lumbar puncture for its relief is indicated. The blood is kept fluid by its intermixture with the cerebrospinal fluid.

Murphy alludes briefly to the causes of death after spinal injury, and especially warns against the use of the catheter, holding that if the bladder be allowed to overflow infection is not so likely to take place. He notes that relaxation of the vesical sphincter is favored by transproctal massage. Decubitus can be retarded or avoided by the water-bed or air-cushion, frequent changes of position, and by dermal cleanliness.

As to syringomyelia, Murphy believes that this disease in its circumscribed form offers a field for surgical intervention. As soon as opportunity presents itself he will perform a subdural drainage with an unabsorbable seton, which will keep a permanent communication between the syringomyelic canal and subdural space, and insure an equalization of pressure, which should

stop the advancement of the disease, even if it does not permit restoration of function, in some of the compressed ganglion cells and axones.

As to the paraplegia of spinal caries, Murphy advocates a simple laminectomy, displacement of the cord to one side, exposure of the granuloma, removal with a bone curette, filling the cavity with a Moorhof plug, and closure of the wound without drainage. He favors removing the laminæ and spinous processes completely. In acute meningitis he formulates the indications for operation as follows:

Lumbar spinal puncture is advised for the diagnosis as well as for the relief of cerebrospinal tension. Large quantities of fluid may be withdrawn at individual sittings, and the sittings may be as frequent as the symptoms of cerebral pressure occur. A cannula with a double opening at its lower end may be substituted for the needle in cases of rapidly recurring hyperpressure. This must be very cautiously protected against the entrance of air and microörganisms.

Continuous drainage of the spinal canal with secondary drainage of the ventricles may be established by a laminectomy with the insertion of a very small tube. This, however, will be rarely indicated if the cannula is used judiciously and to its best purpose.

Transoccipital ventricular drainage can be made through a musculocutaneous flap with a trephine opening in the occipital bone to the right or left of the median line, an inch posterior to the foramen magnum. The dura may then be incised, the bony opening enlarged with bone forceps, the velum exposed and opened if indicated, or the tube may be inserted in the subarachnoid space without opening the velum. This treatment can be utilized in connection with spinal puncture or laminectomy.

Transparietal ventricular drainage can be established by following the description given in the average work on surgery for the insertion of the tube into the lateral ventricles. A small trephine opening is all that is necessary for this procedure. It is an operation that will be rarely undertaken, as lateral ventricular drainage is not often indicated in meningeal infections. The duration of the drainage is governed by the general surgical principles of drainage. Murphy prefers rubber to the metallic type of drain.

In performing laminectomy for continuous drainage or irrigation the body must be so placed as to give the maximum convexity to the lumbosacral region. A U-shaped incision three inches long is made over the sacral region, the most convex portions of the curve touching the last sacral tubercles, while the branches of the U run upward along the line of the posteroexternal tubercles of the sacrum.

The skin, subcutaneous tissue, fat, and muscles are divided down to the bone, and the flap is dissected until the sacral foramina are exposed. With the bone-cutting forceps, one blade in the sacral canal, the laminæ are divided on either side until the sacral dura is exposed at the third body. This is easily accomplished. The sacral dura bulges very conspicuously in the field, and corresponds to the middle of the third sacral body one and a half inches from the coccygeal tubercles (or lower posterointernal tubercles of sacrum). It forms quite a large sac or pouch, which is called the sacral cerebrospinal cistern. Before opening the cistern it is advisable to aspirate the blood by a siphon lying in the wound, so as to have a clear view. In fact, the siphon should always be in action for the clearing of the operative field when this is deeply situated. The dural sac is split parallel to its long axis, sufficient cerebrospinal fluid is allowed to escape to relieve tension, and an artery forceps put on the opening so as to close it temporarily.

If it be deemed advisable to perform in connection with this operation transoccipital drainage, an incision is made parallel to and below the occipital ridge on one side down to the bone. The horizontal incision is joined by a vertical one along the middle of the occipital bone, prolonged down to within one-half inch of the foramen magnum. After dissecting and reflecting the

musculocutaneous flap downward, the occipital bone is trephined either over the left or right cerebellar fossa, close to the middle line. The bone is comparatively thin at this point, and the openings are easily made and enlarged to the desired size. The dura at this point bulges conspicuously over what is commonly known as the cerebellar cistern. It is incised with a small scalpel, and if through-and-through irrigation be indicated the blunt point of a common intravenous transfusion outfit, connected with a fountain syringe of normal salt solution, is introduced into the opening. The fluid is allowed to flow through the spinal canal with the desired pressure readily regulated by the height at which the can is held. In order to demonstrate the certainty of the flow from the subdural cerebellar cistern into the spinal canal and down to the sacral cistern, it may be colored with carmine. Tubes can be inserted into both cerebellar and sacral openings and kept in place, the cerebrospinal fluid tension being regulated by clamps on the tubes. The irrigation may not be needed, as a simple drainage with relief of pressure or pus tension is often all that is required to conduct to a cure. It is the tension that favors absorption and tissue necrosis, and tiding over the primary acute pressure of the products of infection is life-saving.

If the foramen of Magendie is closed, a V-shaped piece of the velum can readily be removed with the scissors, establishing a direct communication from the fourth ventricle to the subcerebellar cistern. This operation should be performed in every case of central hydrocephalus, whether of tuberculous or traumatic origin. Eleven years ago Murphy performed it for the first time, and the patient, who was almost blind from a rapidly increasing optic atrophy, retained the then remaining fragmentary vision, was relieved of his periodical, maniacal headaches, and enjoyed perfect freedom from all of the symptoms during the succeeding years. This shows that when optic atrophy is threatened from a ventricular fluid retention, excision of the velum should be resorted to; it is neither difficult of execution nor dangerous to the patient. Asepsis is a requirement to success. Central ventricular drainage cannot be maintained with the foramen of Magendie occluded. The velum should be divided freely in all cases of leptomeningitis, when closure is suspected.

In spina bifida Murphy advises excision of the sac, which is best attacked from the side, because the fibers of the cord are more frequently spread and attached to the median portion of the posterior wall, within the line of embryonal cleavage. When the sac is pedunculated it should be first freed from its attachment to the skin and neighboring structures, except its highest point, which is adherent to the skin; there an elliptical cutaneous flap should be permitted to remain attached to the sac. When the latter is freed to a level with the cord, a provisional ligature should be thrown about its neck without tying. The sac should be opened, carefully examined, and if the cord is not protruding the ligatures should be firmly tied; an overstitch of catgut should give it additional support. If the base is broad, the same procedure should be followed, except that after opening the sac and inspecting it the ligature should be removed. It should then be amputated at its base and carefully sutured. If it be a case of syringomyelia, and if the cord protrudes into the sac, the fibers of the cord should be freed from their attachment to the meninges and placed in their normal position, and the opening in the sac closed with a continuous chromic catgut, or, preferably, kangaroo-tendon suture. If a complete syringomyelia exist, the cord should be amputated in both directions from the center of elevation to a normal anatomic zone; then a careful end-to-end suture of fibers should be made if the spina bifida be situated in the caudal zone. If above the caudal zone, the cord should be freed and replaced within the dural sac without suture, and the opening closed, with no hope of motor improvement offered the patient. In localizing the muscles supplied by the distal fibers the faradic current should be used. Results have been most satisfactory

after this technique, both immediate and remote.

Murphy's description of the symptomatology of tumors of the spinal cord is extremely vivid and clear.

As to the therapeutics, his advice here is characteristically rational and practicable. In all cases of tumors it is advisable to give antisyphilitic treatment for a period of three or four weeks. If no amelioration is obtained no further attempt should be made. Gummata are not common, as can be seen from Schlessinger's table of four hundred cases of tumors, of which twenty-one were syphilitic. These statistics show that only one case in twenty should be relieved by this treatment. The policy of "benefit-of-the-doubt" treatment is very frequently fatal, because much precious time is lost. It should also be remembered that a mass resulting from tuberculous decay may form a circumscribed granuloma acting as a tumor and pressing upon the anterior portion of the cord. If such a tumor does not improve by medical and hygienic treatment, immobilization of the spine, and relief of local pressure, then the granuloma must practically be regarded as a tumor, and as such removed by laminectomy. The next step in the consideration of surgical intervention is to ascertain whether a tumor is single or multiple, benign or malign. It can readily be understood that multiple tumors situated in distant segments are not amenable to treatment. Malign tumors should be removed only if circumscribed. It is most important of all to know which tissue is involved and to what extent.

As to the peripheral nerves, after a brief description of the anatomy and a most interesting discussion of the theories of degeneration and regeneration, Murphy discusses the whole subject from the standpoint of the practicing surgeon. He ends his paper by conclusions which in the main will be accepted as final most readily by those with largest experience. Among these conclusions perhaps the one of major importance is to the effect that the greatest barrier to axonal functional regeneration is the interposition of connective tissue. Primary union is a *sine qua non,* and moreover every nerve union should be surrounded by a guard against the intervention of collateral connective tissue. Nerve suture without infection and without the interposition of connective tissue can be made as uniformly successful as are bone unions under similar conditions. The earlier nerve union is reëstablished, the more rapid and certain the restoration of function.

This article has been given this extended notice because it is the most recent, the most practical, the best illustrated, the most essentially clinical article on nerve surgery that has appeared. It is worthy of careful study, every word of it.

REPORTS ON THERAPEUTIC PROGRESS.

THE TREATMENT OF NEURALGIAS WITH INJECTIONS OF ALCOHOL.

HAUCK states in the *Lancet-Clinic* of December 1, 1906, that he was called upon to accompany a patient to Munich, Germany, where he placed himself in the hands of Schloesser for the treatment of a trigeminal neuralgia of about twelve years' standing. Mr. H. had been operated on for the first time about ten years ago, when the supraorbital and infraorbital nerves were thoroughly resected. For two years he was free from his trouble, and then after severe exposure the pains returned.

With intermissions his trouble gradually increased until two years ago, when another removal of nerves was done. This operation relieved only the twitching of the eyelid but not the pain, which increased until it was unbearable. The writer saw him first about the end of May, when he had been unable to sleep for six days. Nothing he gave him relieved him to any great extent, but he procured from four to six hours' sleep at night and several hours during the day under the effect of potassium bromide and chloral.

When he heard that Schloesser, of Munich, was successfully relieving neuralgias by means of injections he insisted upon the writer taking him there. As removal of the ganglion had been advised against on account of his age, seventy-six years, and as nothing seemed to relieve him, the writer consented.

His case proved to be a very obstinate one, and not until all three branches of the fifth nerve had been injected and the scars of former operations infiltrated did he find relief.

The method pursued was to inject from ten to thirty minims of 80-per-cent alcohol into the nerves where they leave the skull. This is done by means of specially constructed needles.

The addition of cocaine or stovaine, as used by Oswalt, the author considers unnecessary and possibly dangerous. The alcohol alone relieves the pain within a few seconds after coming into contact with the nerve trunk, even when a spasm of pain exists at the time that injection is commenced. The site for injecting selected by Oswalt is, in the opinion of the author, not so well chosen, nor is the injection so easy of accomplishment there as at the several sites selected by Schloesser. Schloesser assured the writer that he had a record of 100 per cent of cures to his credit since he commenced the use of alcohol injections about four years ago.

On the author's return it was his fortune to have Mr. J. R., aged sixty, referred to him for treatment. He had suffered almost continuously since 1893 with pains in the upper and lower jaw on the left side. Believing the teeth at fault he had had them all removed, but without obtaining relief. Various plans of treatment had been tried with no, or only temporary, relief. When the writer saw him, on October 1, he was unable to speak or swallow without bringing on a severe attack of pain. He complained most of the pain over the mental foramen. His sleep was much disturbed by attacks of pain at night, and eating was a torture. The author injected ten minims of 80-per-cent alcohol into the mental foramen.

October 3. Pains less, slept better, no pain at site of injection, but some now especially over the left cheek. Injected 15 minims of the solution into the infraorbital foramen.

October 8. Patient has been more comfortable, but still cannot speak or eat without pain. Injected 20 minims of the solution into the second branch of the fifth nerve, where it emerges from the skull through the foramen rotundum.

October 12. He has been much relieved by last injection, but still has pain on swal-

lowing. Injected 20 minims of solution into third branch of fifth nerve where it leaves the foramen ovale.

October 16. Since the last injection he has had no pain or neuralgic attack. He speaks and eats without pain and sleeps "like a baby," as he expresses it.

The only thing complained of is the numbness of all parts supplied by the second and third branches of the fifth nerve. As the first branch was never affected, it was not injected.

From what the author has seen and heard it seems to him that the removal of the Gasserian ganglion is an unwarranted and unnecessary operation. It also goes far toward proving that the seat of disease lies not in the ganglion, but in the nerves.

Drs. Mayo assured the writer that they seldom found it necessary to remove the ganglion, and now operated by plugging the foramina to obstruct the reunion of the nerves.

Dr. Ferguson, the author is told, is using hot saline solution in place of alcohol. Osmic acid has been tried, but relapses have been the rule within a short time.

Ether, carbolic acid, cocaine, chloroform, etc., have all been tried and discarded. The injections of 80-per-cent alcohol can be as successfully used in sciatica and other forms of neuralgia.

THE TREATMENT OF SOME OF THE FORMS OF GOUT.

LUFF in the *Practitioner* for February, 1907, tells us that the treatment of gout should have for its aim the following objects: (1) The treatment of the gouty paroxysm in cases of acute gout, and the relief of the pain as speedily as possible; (2) the treatment of the subacute or chronic condition, and the prevention of the recurrence of an attack; (3) the treatment of the affected joint, or joints, with the object of removing the uratic deposits, and of preventing permanent deformity; and (4) the treatment of the various forms of irregular or abarticular gout.

The Treatment of Acute Gout.—In order to arrest the abnormal intestinal fermentation, to remove the excessive numbers of intestinal bacteria, and to relieve the catarrh of the intestinal mucosa, all factors in the development of abnormal intestinal toxins, the bowels should be freely opened with four grains of calomel or "blue pill," followed by a saline aperient. For the first twenty-four hours it is preferable that no food should be taken, but water should be drunk freely.

For the treatment of the gouty paroxysm, the limb should be placed in the horizontal position, or slightly elevated above the level of the body, and a cradle should be arranged so as to take the weight of the bedclothes from the affected joint, warm packs should be arranged around it, consisting of cotton-wool saturated with a soothing lotion, and then lightly covered with oiled silk. The author has found the following lotion most useful:

℞ Sodii carbonatis, ʒiij;
Linimentum belladonnæ, f ℥ij;
Tincturæ opii, f ℥ij;
Aquæ destillatæ, q. s. ad f ℥viij.

A small portion of the lotion should be mixed with an equal quantity of hot water, and then poured on cotton-wool previously arranged round the joint. The pack should be changed every four hours. In connection with the acûte paroxysm, no attempt at local depletion, such as the application of leeches to the inflamed joint, blistering, or incisions, should on any account be made, owing to the great liability of thereby extending the inflammatory condition, and so producing subsequent ankylosis or deformity.

For the internal treatment of acute gout, colchicum is one of the most valuable drugs that we possess. It should be especially used for acute gout, and for subacute attacks supervening on chronic gout. If it is used continuously, tolerance is apt to be acquired, and then the drug ceases to act. At the commencement a large dose of 30 to 40 minims of colchicum wine should be given, followed by a mixture containing in each dose 15 to 20 minims of the wine, with from 40 to 60 grains of citrate of potassium, which should be administered three

times a day. The citrate of potassium, which is given for its combined properties of acting as a diuretic and of diminishing the acidity of the urine, may, if desired, be given as an effervescing mixture, using 30 grains of potassium bicarbonate to 20 grains of citric acid. Colchicum reduces the gouty inflammation, relieves the pain, and shortens the attack. It should only be taken under medical advice, and should never be given in such doses as to produce extreme depression. After the inflammation of an acute attack has subsided, the doses of colchicum should be gradually diminished until the drug is left off. A very useful method of administering colchicum is in the form of its active principle, colchicine, which may be given in doses of one-fiftieth to one-eightieth of a grain three or four times a day immediately after food. Only a few patients will tolerate doses of one-fiftieth of a grain, the contraindication to such a dose being the production of diarrhea and intestinal griping. The following constitutes a very useful pill:

℞ Colchicinæ, gr. 1/60;
Ext. nucis vom., gr. ¼;
Ext. hyoscyami, gr. ½;
Ext. gentianæ, gr. 1.

After the initial free purgation, as previously mentioned, it is not desirable to produce too free an action of the bowels. All that is necessary is to have a sufficient action to relieve portal congestion and intestinal catarrh. The following pill effects this purpose, in most cases, very well. It is administered at night, and is followed up, when necessary, by a dose of saline in the morning:

℞ Leptandrini, gr. j;
Iridini, gr. j;
Ext. hyoscyami, gr. j;
Ext. colocynth. co., gr. jss.

If the pain of an acute attack of gout is so severe as to prevent sleep, seven grains of veronal, or ten grains of trional, may be given, or a full dose of extract of hyoscyamus will, in some cases, act as a very useful anodyne. The administration of opium or morphine should, if possible, be avoided, owing to the risk of its deficient elimination, and also on account of its diminishing the amount of urine, and its tendency to derange digestion and to check hepatic metabolism.

POSTPARTUM HEMORRHAGE.

The *British Medical Journal* of January 26, 1907, contains an article by LE PAGE on this topic. Taking the steps in their order, the author advocates raising the pelvis to cause blood to gravitate toward the heart and brain, and to prevent bleeding from the uterine and ovarian veins. The aorta is compressed to immediately arrest arterial hemorrhage. The spinal column beneath and below the umbilicus is very prominent and broad, and for the length of three or four inches forms an admirable *point de résistance,* for the aorta lies immediately over it. Compression is best made by the outer, the ulnar, portion of the left clenched hand, than which nothing could be more convenient and effective. Pressure should at short intervals be made to slide from one part to another of the available three or four inches, that no injury be done to the sympathetic system of nerves which forms a network around the vessel, and should be continued until uterine contraction is secured, even if this be delayed for one or two hours. Its release must always be very gradual; the greatest care in this particular is essential. An important fact is that, although no blood is allowed to pass the compressing hand, there is still a sufficient, but very limited, flow through the ovarian arteries to maintain uterine vitality.

He raises the legs and arms to transmit their blood into the trunk, and then bandages them firmly to prevent the return of blood when they are lowered. The effect of this maneuver is that in many cases a tension of the blood stream approaching the normal is attained in one or two minutes. Ergot and other remedial measures are at once available.

The hand, rendered aseptic, is then very carefully passed into the uterus—first, to detect any possible laceration of the body or cervix or any remaining portion of placenta; and secondly, to afford a *point d'appui* for grasping and compressing the

uterus from outside. Having elevated the pelvis and limbs, it may be thought by some that it is unnecessary to firmly bandage. This is not so, for it would be impossible to keep the patient in that position for any considerable time, and to lower them would be to endanger her from syncope; nor is the tourniquet allowable, for it is altogether necessary to observe great caution in restoring the circulation—that is, in allowing the blood to be taken from the trunk slowly and in a ratio with the increase of its volume by absorption and assimilation.

The vast advantages of this intrafusion of whole blood are: In extreme cases tension in the vessels is immediately restored, and the heart and lungs are filled with whole, normal blood. The paramount importance of this must be evident. Contrasted with the intravenous injection of saline fluid or the intercellular injection of other fluids, it should be obvious that whilst the latter comparatively slowly increases the bulk of fluid, blood both supplies resistance for the heart to act upon and is that alone through which a normal vital condition can be restored, and the nerve centers develop that energy without which the uterine muscle cannot contract and retract.

This treatment—which he submits is rational, always practicable, and, so far as his experience goes, unfailing—is based on the proposition: That no work can be done without energy; that there is no energy inherent in uterine muscle; that contraction of the uterus is wholly dependent on energy derived from the uterine nerve centers; that, deprived of blood, nerve centers do not, and cannot, develop energy; and that, in the collapse of profuse hemorrhage, there is practically stasis in the vascular system which supplies the nerve centers. Therefore, as depletion of blood is rapidly going on, instantly arrest the flow; as nerve centers are paralyzed, restore their vitality; and lastly, as the uterine muscle is uncontracted, now that the patient is safe, and innervation is reëstablished, use such measures as may be necessary to secure normal firm contraction.

The personal experience of the author, derived from the responsibility for about 5000 parturitions, has so far attested the soundness of this theory and afforded proof of its practicability, in that he has never seen a death from postpartum hemorrhage.

VACCINATION OF THE CORNEA.

MENZIES and JAMESON in the *British Medical Journal* of January 26, 1907, make the following report:

Accidental inoculation of some part of the conjunctiva with vaccine is occasionally reported, but the authors have been unable, in the literature at their command, to find a definite description of such an accident affecting the cornea. There is a short report in the *Lancet* (1906, i, p. 999) of a case of accidental vaccination of "the eye," in which it is stated that the resulting impairment of vision would have been worse but for the fact that the patient had been vaccinated two years before. Aron has reported a case in which the cornea was so seriously affected that permanent opacity could not be avoided. In both of these cases the cornea may have been the site of inoculation, but whether that be so or not the condition is so rare that it seems desirable to record the following case:

On February 27, 1906, Dr. Jameson was breaking a tube of lymph, when a fragment of the tube flew into his right eye. The eye was promptly washed out, and there was no further discomfort till March 4, when there was some indistinctness of vision due to monocular diplopia. Vision, nevertheless, was 6/6, and nothing abnormal appeared on examination. On the following day there was a small circular area, the size of an ordinary pin-head, bare of epithelium in the lower outer quadrant of the cornea. For three days this area gradually increased in extent, till it occupied one-fourth of the total area of the cornea. There was no infiltration of the corneal substance, but considerable conjunctival injection. On March 9 chemosis and edema of the lids became marked, and about this time and for several days the preauricular gland was enlarged and tender. The chemosis and edema remained at their maximum

till March 15, and then during the following ten days slowly diminished, but during all this time the denuded area of the cornea remained bare of epithelium. Finally, on March 25, the epithelium began to spread over the exposed corneal surface. Growth took place chiefly from above and below, very slightly from the sides of the patch. As compared with regeneration after injury, the rate of progress was slow, and it was March 30 before the process was complete. Although no infiltration or loss of the corneal substance had been observed, the regenerated epithelium had a "matt" surface. Unfortunately, recovery was retarded by the occurrence of a secondary ulceration of the affected area. On April 20 the spot became infiltrated, and an ulcer developed which showed no definite sign of healing for about three weeks, and was largely responsible for the impairment of vision. By May 10, however, the ulcer was healing satisfactorily, and the patient was ultimately able to resume work on June 13, although the eye continued weak, and dark glasses had still to be worn for a time. During the acute stage the pupil never dilated fully with atropine, and there was a considerable amount of iritic pain, but there was no exudation or synechia. On June 29 vision was J. 14 (letters), on September 7 it had improved to 6/36, on September 25 to 6/24 (one letter), and on December 13 it was 6/18.

The accompanying symptoms were chiefly photophobia, epiphora, and pain. The epiphora was one of the earliest symptoms, and persisted to the end. It was continuous and very troublesome. The pain was twofold: (1) a superficial burning and smarting which often kept the patient awake at night, even after healing had taken place; and (2) iritic pain, which had to be controlled by very free use of atropine.

As regards treatment there is not much to be said. The eye was kept clean throughout by means of frequent ablutions with warm boric lotion. Atropine was essential to control the iritic pain. At one time it produced a considerable rash, and duboisine was substituted, but proved ineffectual. On Dr. Glasscott's suggestion the atropine was resumed in the form of ointment, and this proved less irritating. At an early stage argyrol was used as a possible means of destroying the vaccinal poison, and it was continued throughout the acute stage, but for no better reason than that when it was discontinued progress did not seem to be so favorable.

THE TREATMENT OF ARTERIAL HYPERTENSION.

JANEWAY in the *New York Medical Journal* of February 2, 1907, asks and answers the question, how shall a wise physician act in the presence of marked hypertension? First of all he must institute preventive treatment, which shall limit further mischief, check the development of the underlying kidney lesion, and hinder secondary degenerative changes in arteries and heart. The author touches upon this only in its larger outlines. Diet is most important, and should be carefully planned to attain physiological economy of nutrition, particularly of proteid metabolism. All kidney irritants and substances difficult of elimination in the urine must be interdicted. Von Noorden has shown the need for moderation in the total fluid taken. Alcohol is usually, though not invariably, unwise. Occupation requires supervision, since prolonged or arduous mental work and excitement tend to raise blood-pressure strikingly. On the other hand, hard physical labor entails too much strain on the already hypertrophied heart. Moderation is the desideratum; sufficient congenial occupation and moderate physical exercise are valuable means of prolonging life. One frequently sees active men of affairs, who give up all business rather suddenly, go to pieces more rapidly than would have been expected had they kept under full steam. Where exercise is not well borne, on account of beginning heart weakness or for any reason, massage is needed to keep up the venous and lymphatic circulation and the muscular nutrition. The author recalls many examples of its favorable nutrition.

Tobacco is best sharply restricted, since it has a marked hypertensive effect. Strain-

ing at stool must be forbidden, and the need for it forestalled by laxatives. Cold baths agree with some of these patients, but as a rule those of neutral temperature are better. Similarly, a warm climate for the winter is advantageous. With such a regimen one often has the gratifying experience of seeing a gradual fall in blood-pressure, together with an improvement in the patient's strength and *bien aise*.

As to drugs, the iodides, in small doses, long continued, seem to belong among the preventive measures. Their action is little understood, but probably affects the nutrition of the vessels. Animals given adrenalin injections are said to develop arteriosclerotic changes more slowly when iodides are given simultaneously. They have no direct effect on blood-pressure.

Where no symptoms of a threatening nature exist, these preventive measures alone are called for. Under such circumstances a systolic blood-pressure of 200 mm.—yes, even of 250 mm. and over—is not incompatible with a number of years of comparative comfort and activity, particularly if the response to treatment is favorable and the patient coöperates heartily.

Of the dangerous accidents which befall persons with hypertension, such as cerebral or other hemorrhage, uremic convulsions, anginal seizures, acute pulmonary edema, and the like, the author does not think it necessary to speak here. In the presence of peril to life itself, the vasodilators must be used freely and without hesitation. One, however, should not stop at even large doses, if the symptoms continue; though blood-pressure observations, when possible, are an excellent guide to dosage. Venesection, particularly in acute uremia, has a marked hypotensive action. One simple therapeutical measure deserves special mention—rest in bed. In the exacerbations of a chronic nephritis, so common in hospital practice, bed and a milk diet often suffice to reduce the pressure strikingly, without any other treatment.

In the majority of our patients, however, the danger most to be dreaded lies in another quarter. It is the onset of gradual insufficiency of the left ventricle, with secondary failure of the right ventricle, general venous stasis, and all the phenomena of an uncompensated cardiac lesion. In fact, hypertension and an aortic stenosis are mechanically similar in their effect on the heart. Just under these conditions a failure to recognize the compensatory nature of hypertension and the necessity for its maintenance works the greatest harm. Beginning asystole often leads to a slight fall in pressure, which is considered evidence of improvement; or, if the patient is seen first with marked heart weakness and high blood-pressure is found, which may still be below the level that individual requires, nitroglycerin and similar drugs are given, to "let up on the work of the heart," while digitalis is withheld. If digitalis be given and fail, it may prove, and often is, an inefficient preparation. Of one thing the author is convinced: with the appearance of edema and diminished urine, digitalis, best in the form of a freshly made infusion from good English leaves, is urgently indicated. In some cases in which the blood-pressure is very high it may be wise to give vasodilators at the same time, but never to the point of lowering the tension. Rest in bed and marked restriction in the quantity of fluid taken should never be forgotten. Under such circumstances a rise in blood-pressure is to be welcomed as a sign of change in the right direction, and will usually coincide with the establishment of diuresis and the absorption of the edema.

THE PHYSIOLOGICAL EFFECT OF ALCOHOL ON THE ANIMAL BODY.

HALL, in the *Journal of the American Medical Association* of February 2, 1907, gives the following summary of this subject as he sees it:

The Effect on Nutrition.—The first question that arises in this connection is an old one: Is alcohol a food?

Ethyl alcohol possesses several characteristics in common with the carbonaceous foods, *e.g.*: (1) it is composed of C, H, and O; (2) it is readily oxidized in the liver, yielding CO_2 and H_2O, which are excreted;

(3) it yields heat incident to its oxidation, and this heat naturally augments the body income of heat; (4) ingestion of ethyl alcohol leads to a decrease in the catabolism of carbonaceous foods and may even "spare" proteins.

In this connection one must not lose sight of the following facts:

1. All vegetable toxins and alkaloids are composed of the same kind of chemical elements as enter into foodstuffs, viz., C, H, O, and N.

2. Toxins and alkaloidal poisons in general are oxidized in the liver, through the agency of oxidases, whose function is to oxidize and thus to make harmless substances which would act as protoplastic poisons on all cells with which they come in contact. When moderate amounts of such toxins are taken the defenses of the system are sufficient to reduce them to a harmless condition and no immediate injury results. If larger quantities are ingested the full drug effect (narcotic in the case of alcohol) is immediately experienced, the oxidases of the system being unable to defend it against a large dose.

3. All oxidation yields heat, whether it is a normal catabolism or a protective oxidation. That the heat from the oxidation of alcohol is not a normal catabolism for the purpose of heat liberation is evident from the fact that, notwithstanding the liberation of heat through oxidation of alcohol, the temperature of the body falls, because of increased loss of heat from the surface. This increased loss is due to dilatation of peripheral vessels.

4. Decreased catabolism of carbonaceous or nitrogenous foods following ingestion of a narcotic is a universal fact depending on the drug effect and giving to the oxidized narcotic no significance as a food. It may be said without reservation that ethyl alcohol is not a food in the scientific significance of the word. Hall regards the following as statements of demonstrated facts:

So many antitheses between alcohol and food are noted that there is an inclination to try the deadly parallel on the two substances.

FOOD.	ALCOHOL.
1. A certain quantity will produce a certain effect at first, and the same quantity will always produce the same effect in the healthy body.	1. A certain quantity will produce a certain effect at first, but it requires more and more to produce the same effect when the drug is used habitually.
2. The habitual use of food never induces an uncontrollable desire for it, in ever-increasing amounts.	2. When used habitually it is likely to induce an uncontrollable desire for more, in ever-increasing amounts.
3. After its habitual use a sudden total abstinence never causes any derangement of the central nervous system.	3. After its habitual use a sudden total abstinence is likely to cause a serious derangement of the central nervous system.
4. Foods are oxidized slowly in the body.	4. Alcohol is oxidized rapidly in the body.
5. Foods, being useful, are stored in the body.	5. Alcohol, not being useful, is not stored in the body.
6. Foods are the products of constructive activity of protoplasm in the presence of abundant oxygen.	6. Alcohol is a product of decomposition of food in the presence of a scarcity of oxygen.
7. Foods (except meats) are formed in nature for nourishment of living organisms, and are, therefore, inherently wholesome.	7. Alcohol is formed in nature only as an excretion. It is, therefore, in common with all excretions, poisonous.
8. The regular ingestion of food is beneficial to the healthy body, but may be deleterious in the sick.	8. The regular ingestion of alcohol is deleterious to the healthy body, but may be beneficial to the sick (through its drug action).
9. The use of foods is followed by no reaction.	9. The use of alcohol, in common with narcotics in general, is followed by a reaction.
10. The use of food is followed by an increased activity of the muscle cells and brain cells.	10. The use of alcohol is followed by a decrease in the activity of the muscle cells and brain cells.
11. The use of food is followed by an increase in the excretion of CO_2.	11. The use of alcohol is followed by a decrease in the excretion of CO_2.
12. The use of food may be followed by accumulation of fat, notwithstanding increased activity.	12. The use of alcohol is usually followed by an accumulation of fat through decreased activity.
13. The use of food is followed by a rise in body temperature.	13. The use of alcohol may be followed by a fall in body temperature.
14. The use of food strengthens and steadies the muscles.	14. The use of alcohol weakens and unsteadies the muscles.
15. The use of food makes the brain more active and accurate.	15. The use of alcohol makes the brain less active and accurate.

DISINFECTANTS AND DISINFECTION.

ALBERT, in the *Journal of the American Medical Association* of February 2, 1907, points out that success depends as much on the details as on the generalities. He, therefore, briefly indicates how, under ordinary conditions, he would disinfect a room:

1. The person who disinfects should put on a cap and gown, and the face, at least the mouth and nose, should be covered with a piece of gauze. The cap, gown, and gauze are later left in the room to be disinfected with the other objects.

2. All holes and cracks should be sealed by pasting over them pieces of paper or filling them with cotton or cloth.

3. Precautions under certain circum-

stances: (*a*) If the wall-paper of the room is badly torn in several places, it should be removed; (*b*) if, by accident, a rug or carpet should have remained in the room, it should be thrown over the back of a chair; (*c*) if the room has no door which it is desirable to open, one window should be left unlocked, to be thrown open when the fumigation is complete; (*d*) no vessels containing water should be left in the room.

4. The patient's clothing and the bedclothing should be thrown over the ends of the bed, backs of chairs, or over a wire or rope stretched across the room.

5. Valuable books should be opened and placed on end, so that the leaves may be separated as much as possible.

6. Determine the temperature of the room and see that it is above 60°.

7. See that the room contains enough moisture in a vaporized state.

8. Potassium permanganate is placed in a vessel which has been slightly heated beforehand; to this the formaldehyde is added; 8½ ounces of the potassium permanganate and 20 ounces of the formaldehyde (40-per-cent formaldehyde) to every 1000 cubic feet of room space to be disinfected if penetration of mattresses, etc., is required. If only surface disinfection is desired no more than one-half of these volumes is necessary. If the formaldehyde is generated by a method which liberates all of the gas only 16 ounces are necessary. These volumes are much greater than those given by the manufacturer of most disinfectants. No doubt, also, the volumes given are somewhat greater than absolutely necessary in all instances. Nevertheless, the author thinks that in using disinfectants we ought to employ the same principles as financiers in estimating profits or expenses. They calculate closely just what they will be, and then allow a good margin against themselves for unforeseen circumstances. On account of the variability of strength of many preparations of 40-per-cent formaldehyde, we should be sure that we secure our solution from a reliable house.

9. Let the gas act for six to twelve hours, and open doors or windows. The placing or evaporation of a little ammonia in the room will neutralize the formaldehyde and thus hasten the disappearance of the odor of that substance.

10. All bedding, patient's clothing, etc., that is not harmed by boiling should next be boiled for one-half hour.

11. Wherever possible, the mattress, rugs, etc., should be steamed; the author believes that every large city should have a steam disinfector for this purpose. Where this is not possible, these articles should be taken outdoors and thoroughly aired and beaten. The person beating them should have a piece of gauze tied over his head, and preferably should also wear a suit which may be sterilized by boiling.

12. Paper, rags, cheap books, and other articles of little value should be burned.

13. In case it is not possible to obtain all of the favorable conditions for formaldehyde disinfection, or if there is any suspicion that there are still organisms that need to be killed, all of the woodwork, and if necessary the walls, should be washed with a liquid disinfectant, such as bichloride of mercury, 1:1000; carbolic acid, 5 per cent; or one of the various proprietary coal-tar preparations properly diluted.

SULPHATE OF SPARTEINE IN SURGICAL PRACTICE.

McGuire states in the *American Journal of Surgery* for February, 1907, that like most surgeons he devotes little time to the study of the therapeutic action of drugs. Patients who are referred to him have usually exhausted the resources of the materia medica, and in his practice he rarely has occasion to employ medicinal agents other than the well-known anesthetics, antiseptics, purgatives, and tonics. He believes, however, he has accidentally discovered in sulphate of sparteine a valuable remedy for the prevention and treatment of postoperative suppression of urine.

He does not know whether his experience coincides with that of other surgeons, but it is a fact that in the last five years he has lost more cases from postoperative suppression of urine than from all other causes

combined, and this despite the almost routine use of chloroform as an anesthetic.

The cases have usually been those with preëxisting nephritis from sepsis or cholemia. Shock has not apparently been a factor, for the condition would not develop for twenty-four or thirty-six hours. A patient operated upon for retention of urine, or for jaundice due to obstruction of the common duct, would do well for one or two days, and just as he was thought to be out of danger there would come the news that he was passing no urine. He would become restless, then listless, would develop a stupor which would rapidly deepen into coma, and would die with all the symptoms characteristic of uremia. In the treatment of this condition the author tried water by mouth, under the skin, and in the rectum; hot packs and vapor baths; cups and counter-irritants; strychnine, digitalis, and nitroglycerin; calomel and saline purgatives, and in one case stripping the kidney capsules, with uniformly bad results.

Two years ago he began empirically the use of sulphate of sparteine, and now has the record of six cases in which he is sure the drug was the means of saving the patient's life.

The therapeutic effect of sulphate of sparteine is to increase the blood-pressure, make the pulse slower and stronger, and act as a powerful diuretic. Its action is manifest in thirty minutes after administration and lasts for four to six hours.

In the author's belief the reason why the value of sulphate of sparteine is not more widely recognized is because authorities advise its use in doses so small as to be worthless. To get results it must be given hypodermically in doses of from one to two grains, repeated every three to six hours. When so employed he has repeatedly seen it stop a runaway heart and set in motion a pair of stalled kidneys. Its use should not be delayed until suppression of urine is already in existence, but it should be prescribed as a prophylactic as well as a curative agent.

The writer does not mean to claim that it is a specific, or that it should be employed to the exclusion of other measures, such as purgatives. transfusions, and hot packs. He does believe, however, from actual experience, that it is preferable to the drugs of the digitalis type in rapidity of action, ease of administration, and, what is more important, results.

THE CAUSATION AND TREATMENT OF SOME HEADACHES.

In the *Lancet* of February 2, 1907, HARRIS writes on this subject. He reminds us that constipation is an extremely common cause of headache, and though it may accompany migraine and may even determine its onset it is less frequently one of the causes of periodic headache resembling migraine, rather than of toxemic headache, which is more constant, often daily in its occurrence. A very definite type of recurrent toxemic headache, which may easily be mistaken for migraine, is that associated with sluggish liver and habitual constipation. The pain in the head, as in migraine, is extremely severe, prostrating the patient completely for about twenty-four hours, and the tendency to these headaches may run in families, increasing the liability to confusion with migraine; but they differ from this neurosis in the following important particulars: There is no evidence of neuroses in the family; the periodic headaches get worse in middle life instead of better; there is no preliminary visual spectrum, though the patient may complain of a certain amount of dimness of vision; there is the close association of the headaches with constipation, furred tongue, foul breath, sallow skin and conjunctivæ, while the headaches may be warded off by a cholagogue and saline aperients and are not influenced by phenazone, phenacetine, bromides, or the usual headache powders. There is no arteriosclerotic factor in this type of headache, the pulse remaining quite soft, and there is no albuminuria. The sluggish liver action and the constipation are the key to the treatment, yet there is a curious cycle of symptoms. The headache will pass off in about twenty-four hours or so, even

though the bowels be not relieved, and the patient then feels quite bright and clear-headed. After one or two days a slight, dull frontal headache returns, especially in the morning, and after an interval varying in different persons, but often fairly constant for the same individual, the severe headache recurs. This recurrent cycle of symptoms ending in the explosion of headache is apparently due in large part to a functional disturbance of the liver, the periodicity of the symptoms suggesting some derangement of its nervous control.

Toxemic headaches are due to a circulating blood poison, which may be introduced into the blood from without, such as alcohol, lead, iron, or ether, or the poison may be some acute microbic infection, as pneumonia, typhoid fever, influenza, or smallpox, or as the result of some chronic morbid process, as chronic gastritis, chronic Bright's disease, gout, diabetes, or cirrhosis of the liver. Gout and arteriosclerosis are both very common causes of chronic headache, the high arterial tension in the latter being a most important contributory cause. The headache in arteriosclerosis may be most persistent and resistant to ordinary treatment, though it may at once yield to nitroglycerin or one of the other nitrites, through the resulting lowering of blood-pressure. In chronic Bright's disease, especially the contracted granular variety with hard arteries, the headache is equally severe and persistent, in part due to the high blood-pressure, and partly due to a toxemia secondary to the kidney disease. Indeed, there are only two other causes of headache so severe and persistent as that of chronic Bright's disease with arteriosclerosis, namely, cerebral tumor and cerebral syphilis.

The headache associated with gout is not always associated with high arterial tension, but is often due to a toxemia dependent upon a faulty metabolism, and appears to be caused by the circulation in the blood of purins and other uric acid antecedents derived from a diet containing an excess of these bodies. These uric acid antecedents are chiefly derived from an excessive meat diet, though they are also contained in tea and coffee. For persons, especially those of sedentary habits, with large appetites who are complaining of frequent morning headache it will be well in certain cases to insist on a rigid purin-free diet of milk, eggs, cheese, butter, cream, bread, nuts, macaroni, potatoes, and green vegetables. Such patients should drink a small tumblerful of some good laxative saline, taken hot the last thing before going to bed. With a weekly dose of calomel or blue pill and a short walk before breakfast every morning relief may often thus be obtained from the persistent distracting pain at the top and back of the head, which, in men over forty years of age, is frequently the result of long-continued excess of proteid constituents in the diet. It is possible that excess of the other constituents of food besides proteid—namely, the fats and carbohydrates—may, as Francis Hare has suggested, be responsible for a similar process of toxemia, which he has named "hyperpyremia." Thus excess of all forms of food, not only proteid but fats and carbohydrates also, is likely to lead to overloading of the liver, and finally of the excretory organs, the kidneys. The postulate that the large majority of people habitually eat too much may be taken as in a fair way of being proved, since the researches of Chittenden on metabolism and the calorific values of diet, on the lines preached by Fletcher, have shown that the average individual can maintain perfect health and strength, while doing fair muscular work, on a diet the calorific value of which is not more than from one-half to two-thirds of that usually accepted as the irreducible minimum.

Lastly, the effect of an open-air life has scarcely received sufficient prominence in the treatment of many forms of toxemic headache. Persons who are subject to chronic headaches should cultivate the habit of keeping their windows widely open, and the hardening process thus slowly applied will not only render the individual far less susceptible to catching ordinary colds, but his tendency to fre-

quent headaches will often completely disappear, and from a listless valetudinarian with always something wrong with him he will become brisk and healthy in mind and body.

THE TREATMENT OF BALDNESS.

La Tribune Médicale for January, 1907, gives the following recipes (Ewald's treatment) for baldness. At the start apply:

Tincture of cantharides, 4 Cc.;
Balsam of Peru,
White wax, of each 8.0;
Oil of rosemary, 20 drops;
Vaselin, 60.0.

Later, if the baldness persists:

Balsam of Peru,
Tincture of cantharides, of each 10.0;
Oil of jasmine,
Oil of neroli,
Oil of rose,
Oil of bitter almonds, of each 15.0;
Sterilized beef marrow, 50.0.

Brocq's treatment is as follows:

Acetic acid, glacial, 5.0;
Tincture of cantharides, 10.0;
Tincture of rosemary, 25.0;
Tincture of jaborandi, 25.0;
Rum, 150.0.

Mix. Apply to the scalp daily.

Barré uses in baldness in convalescence from various diseases:

Hydrochloric acid, 4.0;
Essence of lemon, 150.0.

Mix. Apply night and morning.

Lassar uses in alopecia:

Naphthol, 50.0;
Alcohol, 100.0.

Wash the scalp with tar soap; then apply the above and wash in Van Swieten's solution.

A prominent dermatologist in New York uses the following formula as a cure for dandruff and incipient baldness; the amount of castor oil should be varied to suit the case, and the mixture should be well shaken before using:

Resorcin, ʒj;
Betanaphthol, ʒss;
Chloral hydrate, ʒij;
Tr. cantharides, ʒiv;
Tr. capsicum, ʒj;
Castor oil, ʒss to ʒij;
Cologne water, ʒiv;
Bay rum, enough to make Oj.

The following is taken from some therapeutic notes published in the *New York Medical Journal* of December 15, 1906:

When the baldness is not due to a parasitic cause, such as ringworm or favus, or to a general cause like syphilis, various methods have been recommended. Lassar (*Deutsche medicinische Wochenschrift*, July 5, 1906) applies the following:

℞ Sodii carbonatis,
Potassii carbonatis, āā 15 grammes;
Saponis, 70 grammes;
Aquæ rosæ, 100 grammes.
M.

The scalp is to be shampooed with this preparation and with warm water, and washed with water at ordinary temperature, then dried with a towel. Applications are then made with:

℞ Hydrargyri bichloridi, 0.30 gramme;
Phenolis liquefacti, 6 grammes;
Aquæ destillatæ, 150 grammes.
M. To be applied for half an hour, on a compress.

When the compresses are removed the hair is dried in the air, and the scalp is next rubbed with:

℞ Thymolis, 0.25 gramme;
Alcoholis (90°), 100 grammes.
M.

After this has dried, a small quantity of the following pomade is used:

℞ Acidi salicylici, 1 gramme;
Tincturæ benzoini, 2 grammes;
Olei olivæ, 50 grammes;
Olei bergamottæ, gtt. xv.
M.

The *Revue pratique d'obstétrique et de gynécologie* (Oct. 10, 1906) recommends a similar method of treating baldness: The scalp is to be washed with tar soap, daily, for a period of six or eight weeks; later the application is to be made less frequently. The scalp is to be rubbed for ten minutes, and then the soap-suds are removed by a stream of warm water. Following this the scalp is to be washed with cold water and dried with a towel, and a little of the following is used with friction:

℞ Hydrargyri bichloridi, 0.5 gramme;
Aquæ destillatæ, 150 grammes;
Glycerini,
Spiritus odorati, āā 50 grammes.
M.

THE VALUE OF SODIUM CITRATE IN DYSPEPSIA.

According to Dr. L. LACHENY, writing in *La Semaine Médicale* of November 7, 1906, sodium citrate gives favorable results in the treatment of dyspepsia in adults, especially in cases of gastric pain, occurring three or four hours after a meal, followed by vomiting. He prescribes a 10-per-cent solution of the salt in tablespoonful doses (cuillérees à soupe), to be taken every five minutes from the time when the pain and sickness commence until they cease. The average dose required to give relief is from 30 to 60 grains; occasionally a dose of 15 grains will suffice, while in some cases it is necessary to give as much as 120 grains. In case of a relapse the treatment should be renewed, with the result that the symptoms frequently disappear in a few days. In fourteen cases treated in this manner seven were cured in eight days; one patient, however, was under treatment for three weeks and two others for a month before a satisfactory result was obtained. The other patients were benefited by the treatment; one of these, suffering from ulcer of the stomach, experienced considerable amelioration of the pain from the administration of 45 grains of sodium citrate every day for thirty-seven days.—*Lancet*, Feb. 2, 1907.

SOME COMMON ERRORS IN THE DIET AND GENERAL HYGIENE OF CHILDREN.

VOELCKER in the *British Medical Journal* of January 26, 1907, says that at the risk of a charge of "flogging a dead horse" he urges what we as medical men cannot insist on too strongly—the necessity for mothers to nurse their own infants. The objections which are raised to this are the unwillingness of the mother to be tied down and the necessity for foregoing many social pleasures and duties. Such reasons are unmaternal and should not weigh with us, but we must also remember that in addition to the temptation not to be tied too closely to the nursery there is often very considerable pressure exerted on both mother and doctor by the husband; we should remember this when we are endeavoring to get a mother to do her duty to her offspring. In these cases, instead of directing our arguments to the mother, we would do much better if we boldly attacked the head of the house and pointed out to him how much safer it was for both mother and child if the child were breast-fed. An immense amount of evil is done by monthly nurses by the persistent efforts some of them make to induce the mothers not to suckle their infants. The question may be raised, why is it that this should be the case? Well, there are three reasons set forth: First, it is a popular suggestion with the parents in too many cases; secondly, it saves the nurse, or, as she would say, the mother, trouble. If an infant is breast-fed it has to be brought to its mother every two to three hours, and while it is being fed it has to be waited for, and then put back into its cot, and this we can well imagine is not a popular proceeding with the nurse. In the third place, too often the monthly nurse's ideal is to leave a fat and heavy baby when "her month is up." Smithfield dead meat market is her ideal, and provided the babe puts on weight as long as she is in charge all is well. The author here expresses the wish that there were some way by which those who start mischief through artificial feeding could be made to suffer for the later results of their actions. It is surprising how much wrong feeding some children will put up with, but most of these results of artificial feeding only show themselves some time after the monthly nurse has taken her departure, with the promise of her reëngagement for the next "if it ever should come."

The mention of the increase in weight, which is so commonly urged as a defense of the practice of artificial feeding of infants, reminds the writer of another danger to the happiness of a home into which "number one" has arrived. This danger is the weighing machine. He has called it a danger, not a curse, though it may become the latter. He has known the household, he asserts, to be upset because in a certain

few days baby has not gained any weight. There are times when the weighing of infants may give us most valuable information and guidance in treatment, but there are times when much the best course is to send the scales to be cleaned or to get them broken. As a rule, numbers five, six, seven, and eight in a family are not weighed.

As you probably know, there is a widespread belief that cow's milk and mother's milk do not agree, and that a child cannot be brought up on a combination of feeding from these two sources. This, the author is glad to say, is combated by the advice they at the Hospital for Sick Children, Great Ormond Street, give in the pamphlet which they issue on the bringing up of infants. Here is to be found that they urge if the mother's milk be insufficient, the child should be given cow's milk, suitably diluted, in addition to the breast milk. This heresy that the two do not agree is to be strongly condemned, for it will often be found that, whereas the mother's milk may have been insufficient at first, yet after a short time it suffices as the sole form of nourishment for the child. To speak of the endeavors of some mothers to nurse their children as half-hearted is an abuse of terms. Many of these mothers never mean to be bothered with nursing their children, and will seize on any excuse which enables them to pose as unwilling victims of natural defects.

Before you agree to the discontinuance of breast feeding satisfy yourself that the dilution and preparation of the substitute for breast milk has been properly and fairly tried. It is almost laughable to hear what a number of food preparations are in some cases said to have been tried within a short limit of time, and to have been found wanting. It is often thought that because a preparation is not at once retained by a child it is not suitable. This may be one of the reasons why we hear of so many cases which are said to be unable to take cow's milk. In an experience of nearly eighteen years in a large hospital the author has hardly come across a single case in which cow's milk, when properly modified, could not be retained. It is a common error to assume that cow's milk does not suit a child because the child happens occasionally to reject some of it. This leads the author to mention another error—that it is a good sign for an infant to throw up a little at the end of each feeding. The monthly nurse has this as an *idée fixe*, but it should be regarded either as a proof that the child has had too much, or, what is more often the case, that the child has taken its food too rapidly. Want of attention to this point of the rapidity with which children take their food leads to discredit being attached to the food rather than to the feeder.

ARGYROSIS, INCLUDING A PRELIMINARY NOTE ON THE ACTION OF SILVER SALTS.

The *Ophthalmoscope* for January, 1907, contains a paper by BURDEN-COOPER in which he says that the bluish-white pellicle which follows the application of nitrate to the conjunctiva is not coagulated albumen, as is usually supposed, but chloride of silver deposited in the structure of the membrane, and this leads one to add a remark as to the form of application which is most likely to be followed by staining. The writer's experience is in favor of drops, and the explanation is as follows: A strong solution of silver nitrate (15 grains to the ounce) will be precipitated in the cells to such an extent as wholly to destroy their vitality—they are cast off together with the chloride they contain, and in this way the greater amount of silver chloride is got rid of. Silver nitrate, however, penetrates deeper, but the critical concentration, after the initial precipitation, is insufficient to determine a deposit of chloride in the cells in sufficient quantity to destroy them (weak solution). This chloride undergoes the change above described. It is precisely this incapacity on the part of a weak solution of nitrate of silver to be precipitated in the cells in sufficient quantity to destroy them, combined with the frequency of application, that makes the weak solution most potent in causing a stain.

To recapitulate briefly, then, as far as argyrosis is concerned:

1. The essential element in determining the stain is the soluble chlorides of the tissues.

2. It is chloride of silver that is decomposed by light, not albuminous material.

3. The soluble chlorides influence the rate of penetration of silver nitrate.

4. The depth of penetration is a function of the concentration of the silver solution.

5. The seat of the stain is determined by the soluble chloride, and is also dependent on the strength of the solution.

6. The brown stain is either argentous chloride or an oxychloride of silver.

7. The black stain is either metallic silver or the black oxide, probably the former.

8. Drops are more potent in causing a stain than an application of a stronger solution by the brush.

The author then adds a word upon the organic preparations of silver. From his experiments, which were undertaken with a view to ascertaining their penetrating power, as compared with solution of nitrate of silver, his former faith in them, which was never very great, has now almost ceased to exist. One cannot go into them individually here, in fact the author has not tested them all yet; but one can speak of argyrol and of its ally collargol, which are, perhaps, the most disappointing specimens of the lot. The penetration of a 20-per-cent solution of argyrol as compared with weak nitrate is practically *nil*, and one is not surprised to find this, as the molecules of these organic silver compounds must be large, and if so, must exert a powerful influence on the action of the body they collectively represent. Then again, we know that organically combined silver is very inert as compared with the inorganic form. The amount of silver such bodies contain is no criterion of their therapeutic utility. The all-essential point is, can any of the large amount of silver enter into a reaction whereby it changes its electrical state and stability from that of its initial to that of its final state? If so, then it has some potential energy behind it.

Argyrol does not react with a soluble chloride, and most of the silver is deposited as such on adding a dilute acid. The author believes it is wholly inert in the conjunctival sac, or at any rate almost so. Its intense color is a false expression of its energy. He has read of an experiment which consisted in placing a piece of catgut in a solution of argyrol, and after some hours finding it had percolated through and through. The experiment was to show its intense power of penetration. Untwist a strand of catgut and note the fibers it is composed of, and see how absurd it is to assume great penetrative power on the part of a liquid which finds its way between a few fibers of catgut. The time has come for us to cease playing at therapeutics, and to cast out of our Pharmacopœia a lot of worthless material. Argyrol may have a mechanical effect, no doubt, and its sedative action is due to the large amount of silver it contains (metallic silver is sedative in its action), but when this is said the author believes we have summed up argyrol. It is interesting to note the comparative rarity of staining by argyrol or any other organic silver compound (protargol gives a reaction with a soluble chloride, so he does not include it).

One is gratified to see from the report of the special committee appointed by the British Medical Association to investigate the bactericidal action of the various silver compounds that their results are in accordance with those of the writer of this paper. Approached from an entirely different standpoint, they are led to conclude that the amount of silver a compound may contain is no criterion of its bactericidal power, and the same conclusion the writer would extend to properties other than bactericidal. He is quite aware, judging from the extensive literature on the therapeutic uses of the organic silver salts and the praise that has been accorded them, that his ideas rank with those who are in the minority, but they are based on convictions which,

he trusts, are well grounded, and his remarks are presented with all respect to those who have labored in the same field with more favorable results.

He for one, he asserts, will think twice of casting aside, and replacing with any such material as argyrol or its allies, the time-honored nitrate of silver, which has rendered such signal service in ophthalmology, and which is ever on the alert to enter into some reaction whereby its electrical state and stability of its ions are altered. Herein lies its virtue, as far as he can see.

ATROPHIC RHINITIS.

RICHARDS in the *Journal of the American Medical Association* of January 5, 1907, says that when one turns to the special therapeutic measures which are in use they are found to consist in the main of thorough cleansing of the nasal passages from the attached crusts, and the local employment for the most part of some form of stimulating applications. Cozzolini preferred curetting on the ground that the new stimulated tissue which might form would be less annoying than the old mucous membrane. When the pseudodiphtheria bacillus or the pneumobacillus of Friedlander was thought to be the cause, many observers began using antitoxin, and with alleged good results.

These good results were probably, however, entirely due to the fact that the antitoxins increased the glandular activity, thereby lessening the fetor, and had the drawback that so far as any real cure was concerned, they were useless, very expensive, the dosage being enormously large, and probably harmful; and the author believes that the method of treatment has fallen into disuse.

In the years 1886, 1887, and 1888 there was considerable discussion in the American Laryngological Association with reference to the use of four or five milliamperes of the negative galvanic current applied for five to fifteen minutes directly to the nasal mucous membrane by means of a copper wire and cotton saturated with normal salt solution, and many observers, such as Delavan, Hartman, and others, reported cases as greatly benefited or cured. Time, however, has not proved the value of this remedy, and in a private letter just received from Dr. Hartman he states that he gave up the use of the galvanic current some years ago. Whereas the results in the first instance seemed to be encouraging, in the long run he found it no better than other methods resorted to, most of which, he says, have been disappointing.

In the discussion on the treatment before the American Laryngological Association, Rive thinks as good results are obtained by endeavoring to improve the hygienic conditions as from any other particular thing, and advocates the use of local stimulants and bactericides. He mentions a long list of local applications, such as bichloride of mercury 1:4000 or 1:2000, diphtheria antitoxin, galvanism, the Gottstein tampon, iodoform, iodol, aristol (thymol iodide), salicylic acid, camphor, iodine, perchloride of iron, tannin, alum, rhatany, opium, medicated bougies, stimulating volatile substances, essential oils, cubebs, tar, eucalyptus, thymol, antoinsufflators for carbolic acid, menthol, oil of pine, 20-per-cent pyoktannin in wool-fat, electric vibration, borax in glycerin, chloride of ammonium in glycerin, chloride of potassium and phosphate of sodium, ammonium phosphate, honey and terebene, creosote ointment, cubeb cigarettes, creolin bougies, resorcinol 0.5 per cent in vaselin; these have all had their advocates. Destructive agents, such as the galvanocautery, were used at one time, and they are here mentioned only as a matter of history, as it is presumed no one uses anything of the kind at present. Hydrogen peroxide and preparations containing it seem useful as cleansing agents, but in the long run they leave the mucous membrane as dry as ever. Oily substances, as menstrua for other things, have been very much used, but so far as these are concerned, although they have their advocates, the author feels with Dr. T. R. French that in the treat-

ment of these conditions they are to be avoided, as the oils have no therapeutic value in the nasal mucous membrane, tend to block the orifices of the glands, and although for the time being they contribute to the comfort of the patient, are in reality of very little use. Some years ago the writer first brought the use of formalin to the attention of the profession as a remedy in the treatment of atrophic rhinitis as a deodorant and stimulant, and at first got good results, but has now discontinued its use for several years as it was very annoying to the patient, and although productive of some influence in regard to the fetor, did not seem to materially influence the progress of the disease.

Somers has advocated citric acid as a deodorant, but states that it is of no value otherwise; Ingals reported in 1897 that a quarter of one per cent of yellow oxide of mercury is a good remedy; J. H. Nichols reported 10 per cent orthochlorphenol; John O. Roe advocated a mild solution of nitrate of silver. The author has used nearly all of the proprietary silver salts. Dr. Leland advocated the use of 10- to 20-per-cent cocaine on cotton for twenty minutes, then 1:5000-2000 corrosive for the same length of time to get general congestion. There is no doubt, however, that he has long since abandoned this. Hubbard used cotton tampons put in alcoholic solution of acetanilide. Porcher advocated the use of potassium iodide on cotton tampons. This preparation, known as Lugol's iodine, the author used for many years, and still uses more or less, and finds it one of the most efficient measures. He has used ichthyol in its many combinations, with and without glycerin, and has found this one of the many valuable methods of local application. When all is said and done, the local therapeutics seems to reduce itself to a thorough cleansing of the nasal mucous membrane, and the use of any application which produces a mild stimulation is probably as effective as anything. The severer remedies do not seem to have any material advantage over the milder ones. It is the author's belief that we have no specific, but he hopes that one may yet be found, and that the future will not, as in the past, seem to show more failures than successes.

THE COMPARATIVE EFFICIENCY OF SILVER NITRATE, PROTARGOL, AND ARGYROL.

BUTLER in the *Ophthalmoscope* for January, 1907, reminds us that every summer an epidemic of acute mucopurulent conjunctivitis breaks out in Palestine and Egypt, caused chiefly by the Koch-Weeks bacillus. During this epidemic many hundred cases present themselves at the British Ophthalmic Hospital in Jerusalem. The author has in consequence had ample material to make a comparative examination of the therapeutic effects of silver nitrate, protargol, and argyrol in the treatment of this disease. For many years silver nitrate has been exclusively used at this hospital, and it has given excellent results. Long experience has shown that it cannot be safely used in a stronger solution than three per cent, and a two-per-cent solution has generally been employed. A two-per-cent solution of silver nitrate, even if neither neutralized nor washed out, never causes any irritation, nor do the lids, even in infants, ever show any signs of cauterization. Any solution stronger than three per cent. unless at once neutralized with salt solution, has a caustic action, leaving a faint film of destroyed epithelium. This is especially the case with infants, who form the majority of the cases. Accordingly, in making these tests, a two-per-cent solution of silver nitrate was always employed. In adults the silver solution was neither washed out nor neutralized. In infants the eye was washed out with boric lotion, after the application of the nitrate. Protargol and argyrol were used in a 33-per-cent solution (33 grammes in 100 grammes of water). The solution was freely used and the excess was left in the eye. The solutions were always applied by means of small pellets of absorbent wool held in catch forceps. Drops for home use were always given—silver

nitrate in 0.2-per-cent strength, or argyrol or protargol in five-per-cent solution.

These comparative tests, which were made in the summer of 1905, were carried out as follows: Cases were chosen in which the disease was in an early stage, and the two eyes nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use. The next day the eyes were inspected, and the differential treatment continued day by day until either one drug established a superiority or it was certain that both were having an equal effect. Many of the patients were never seen again; probably the first application cured the case.

Forty-two cases in which silver nitrate was tested against protargol were followed up to a complete cure. The results were as follows:

Protargol superior in 62 per cent of the cases.

Silver nitrate superior in 10 per cent.

Equal result in 24 per cent.

In many of the cases in which protargol proved the better drug the difference was not great, but it was sufficient to demonstrate its superior therapeutic action.

In twenty-two completed cases, protargol was tested against argyrol with the following results:

Protargol proved superior in 50 per cent of the cases.

Argyrol proved superior in 0.45 per cent of the cases.

Even result in 49.55 per cent of the cases.

Or in short, in half the cases the effect of the two drugs was the same, and in half argyrol proved to be inferior in therapeutic action to protargol.

In many of the cases in which protargol gave the best result, the difference in its favor was very pronounced; in some of them the "protargolized" eye recovered after two to three days of treatment, whereas there was still a discharge from the "argyrolized" eye at the end of a week. Some of these eyes at once recovered when protargol was substituted for argyrol. In four cases argyrol seemed to cause great irritation, a symptom which the author has never seen caused by silver nitrate or by protargol. After 22 comparative tests the inferiority of argyrol to protargol had become so marked that the tests were discontinued.

In 13 cases argyrol was tested against silver nitrate. In seven of them the effects were equal, in six argyrol showed a slight superiority.

During the past summer (1906) the author used protargol for several hundred cases of acute mucopurulent conjunctivitis, and the results have, in his opinion, been decidedly better than he obtained with silver nitrate in former years.

His conclusions are that protargol is a more satisfactory agent than either argyrol or silver nitrate for the treatment of acute mucopurulent conjunctivitis, and that argyrol is better than silver nitrate. Protargol is perfectly safe up to 33 per cent, and may probably be used in even stronger solutions. Its application causes much less pain than silver nitrate, but more than argyrol. Silver nitrate in strong solutions is a very dangerous agent. It has unfortunately become the custom in Palestine to use 10-per-cent and even stronger solutions, with most lamentable effects. These results have been obtained in conjunctivitis caused by the Koch-Weeks bacillus, and do not in any way contradict the results obtained by others who have tested the colloid silver salts upon gonorrheal conjunctivitis. There are several cases in the summer epidemic in which the gonococcus is present in large numbers, but they almost invariably lead to the non-ulcerative cases upon investigation.

THE MEDICAL TREATMENT OF THOSE GASTRIC DISORDERS IN WHICH THE HELP OF THE SURGEON IS OFTEN DEMANDED.

The *New York State Journal of Medicine* for January, 1907, contains an article by STOCKTON in which he asserts the evident fact that with a peptic ulcer near but not involving the pylorus, the patient should have most careful attention. He advises rest in bed, a milk diet, the abundant administration of bismuth, possibly

also lime-water, light magnesium carbonate, sodium bicarbonate, and the administration of hot alkaline saline waters, early every morning, to empty the digestive tract. While the author is not thoroughly satisfied as to the importance of external local applications, yet he does not feel prepared to condemn Leube's methods of using hot fomentations. He has never given the treatment thorough trial. It has been begun, carried out for a while, but not strictly according to Leube's directions. Occasionally a poultice gives distinct comfort. On the other hand, ice water is more agreeable to some patients. On the whole, he repeats that he is uncertain as to the benefit to be derived by external applications in this disease.

Of late years he has used the stomach-tube in all necessary cases and without hesitation. A soft, large tube is selected, no unnecessary manipulation is attempted, and only a dexterous person should employ it. As we all know there is the utmost difference in the manner of practicing lavage. When really serious gastrorrhagia occurs, he thinks the best plan is to introduce the stomach-tube, irrigate the stomach rapidly to remove accumulated blood, and then allow to flow in a weak solution of adrenalin. As soon as the hemorrhage has ceased the stomach may be irrigated, and any excess of adrenalin removed. We must remember that this substance must not be used indiscriminately. The author usually mixes about one-half a teaspoonful of the 1:1000 adrenalin solution in a glassful of tepid water, allow this to pass through the tube, to remain for a minute or two, and then to run out. Following this a much weaker solution, perhaps one-half a teaspoonful in a quart of water, is used for the purpose of irrigating the stomach. It is very gratifying to see the hemorrhage promptly controlled by this measure. Recently Ewald has advised ice water or gelatin water used through the stomach-tube. The author thinks it is a safe plan to leave gelatin water in the stomach if the hemorrhage has been controlled by adrenalin.

It seems to him as though we should educate all our patients who suffer from gastric ulcer. They should be taught the possibility of hemorrhage and perforation, and should know what to do under the circumstances. That is to say, they should consent to long-continued treatment for hemorrhage, and should be prepared for immediate operation. This recommendation may seem unnecessary, perhaps a little ridiculous; but it does not seem so to the author. He has seen patients unwilling to undergo proper treatment for hemorrhage, and has had patients stubbornly refuse operation after perforation until it was too late, and septic peritonitis was well under way.

For the relief of shock and the agonizing pain which usually succeed the perforation, the prompt use of morphine hypodermically is advisable. It has, however, this disadvantage: The patient, made comfortable by morphine, is unwilling to believe that he has experienced a perforation; and it is well, in dealing with an ignorant person, to secure his consent to the operation before the pain is relieved. Aside from creating this tactical embarrassment, morphine is invaluable and should be promptly used both in perforation and in hemorrhage, and in the case of the latter should be continued in sufficient amount to produce a calming effect both on body and mind. The stomach should be kept perfectly at rest, alimentation should be rectal, and not too much fluid should be used at any one time until two or three days after the hemorrhage has ceased. More than once the author has observed a recurrence of an alarming hemorrhage following the unnecessary introduction of large normal saline enemata given with a view of restoring the force of the circulation. Severe gastrorrhagia can be successfully controlled by irrigation with adrenalin and gelatin water as described above, together with complete rest in bed, morphine hypodermically, and careful rectal alimentation. Where the hemorrhage recurs in spite of these methods, it is wiser to resort to surgery without further delay. The author thinks this point is one on which we

should have further evidence before we can be perfectly sure of our course. Operation at this late hour, he is informed, is not altogether satisfactory. On the other hand, an early operation for hemorrhage has not given as good results as was expected. As matters stand one feels like using medical measures, and the stomach-tube carefully but thoroughly, and if these fail, then have immediate recourse to surgical aid.

THE TREATMENT OF CHRONIC BRONCHITIS OF OLD PEOPLE.

STOCKTON states in the *New York State Journal of Medicine* for January, 1907, that the chronic bronchitis of senility, accompanied not infrequently by an unhealthy state of the mucous membrane of the upper air-passages, is dependent in part upon vascular degeneration and disturbed blood supply; but also to a very considerable extent upon a toxemia, which is almost universally present in old people.

One finds in the aged incompetent kidneys, imperfect digestion, incomplete emptying of the colon, lessened activity of the glandular secretions in the digestive tract; also one finds that the skin is harsh, dry, or sodden, lacking in elasticity and in the natural activity of its glands, showing in fact a poor blood supply and also the effects of intoxication. In the lungs one expects to find a degree of emphysema, comparatively fixed chest walls, and therefore imperfect respiratory movements, all contributing to a lessened oxygen intake. One will usually find in addition that the heart is strained to propel a lessened quantity of poorly oxygenated and overviscid blood through narrow vessels. These facts, without further enumeration of details, may suffice to show that the respiratory function is overtaxed in the aged, that the resistance is lowered and infection made easy. Chronic bronchitis increases in the winter largely for the reason that delicate old people seek the warmth and confinement of the poorly ventilated house. Really the best method of treatment is hygienic and consists in systemic elimination, while increasing the resisting power of the individual. A practical way of carrying out this method of treatment is to prescribe from two to three times a week a hot-air cabinet bath, to be followed by sponging in salt water (not immersion in the tub); the regular irrigation of the colon that the patient may escape the disadvantage of the absorption of toxic material, which so easily occurs in old people, and upon the importance of which Professor Metchnikoff has justly insisted. Then the patients should sit in rooms thoroughly ventilated, with windows open even in winter. If too cold, furs may be worn, but pure air is absolutely requisite.

The writer has had the pleasure of seeing, with scarcely an exception, improvement in all cases of chronic bronchitis in the aged subjected to this treatment—in many complete relief—although it will be seen that the treatment must be repeated year after year. Not only is the cough relieved, but the energy, usefulness, and happiness of the patient are all equally advanced. It is occasionally necessary to advise the drinking of tar water or the use of small doses of potassium iodide. Cough mixtures are particularly forbidden. The principles involved in this method are not limited in application to old people.

NOTE ON THE THERAPEUTICS AND PROPHYLAXIS OF INFLUENZA BY QUININE.

BROADBENT in the *Practitioner* for January, 1907, tells us that from the time of the first invasion of influenza he has found that the best remedy was quinine. His usual prescription is one drachm of ammoniated quinine and two drachms of liquor ammoniæ acetatis every hour for three hours, and then every four hours. In the fulminating attacks of influenza, in which the patient has become comatose, hydrobromate of quinine, given hypodermically in large doses, has completely relieved the unconsciousness.

As a prophylactic he early orders two grains of quinine every morning during the prevalence of the epidemic, and the results

appear to be good. Of course, patients who are taking quinine do occasionally get influenza, but he has known very many instances in which this dose has made a complete difference in the patient's liability to infection, and even in the general mode of life.

The author has, moreover, had opportunities of obtaining extraordinary evidence of its protective power. In a large public school it was ordered to be taken every morning. Some of the boys in the school were home boarders, and it was found that while the boarders at the school took the quinine in the presence of a master every morning there were scarcely any cases of influenza among them, although the home boarders suffered nearly as much as before.

In a large girls' school near London the same thing was ordered, and the girls and mistresses took their morning dose, but the servants were forgotten. The result was that scarcely any girl or mistress suffered, while the servants were all down with influenza.

THE RESPIRATORY COMPLICATIONS OF INFLUENZA.

In speaking of the treatment of these complications of influenza MacKenzie in the *Practitioner* for January, 1907, states that as we have no specific remedy, treatment has to be based on symptoms, and the first symptom of importance is the cough. A great many remedies have been tried, and we cannot say that any remedy is specially efficacious. Where the cough is dry and paroxysmal, heroin hydrochloride in doses of from 1/36 to 1/12 of a grain may be given at intervals of from one to two hours. Barley water, linseed tea, toast and water, or warm milk may be sipped occasionally. The following linctus has been found to be efficacious where the cough is frequent and severe:

℞ Morphinæ hydrochlor., gr. ½;
Apomorphinæ hydrochlor., gr. ¼;
Acid. hydrochlor. dil., min. xx;
Syr. prun. virginianæ, f ℥ss;
Aquæ, q. s. ad f ℥ij.

Ft. linct. Sig.: One drachm occasionally.

When there is bronchitis, a mixture containing citrate of ammonia, citrate of potash, and ipecacuanha wine is useful:

℞ Liquor. ammon. citratis, ℥jss;
Potassii citratis, gr. xv;
Vini ipecac., min. v;
Aquæ, q. s. ad ℥j.

Take as one dose.

Another mixture which is useful is a formula in use at the Brompton Hospital. This is:

℞ Sodii bicarb., gr. xv;
Sodii chloridi, gr. v;
Spirit. chloroform., min. v;
Aquæ anisi, f ℥j.

Take in one dose.

When the secretion is thick and viscid, and expectorated with difficulty, preparations containing opium are contraindicated, and should not be given. Linseed or linseed and mustard poultices or turpentine stupes sometimes give much relief, when there is tightness and soreness of the chest.

The same remedies may be given in cases of pneumonia. Here the main indication is to maintain the patient's strength. The chief danger is cardiac failure, and when there are signs of failing heart, stimulants should be cautiously administered. Digitalis, strophanthus, caffeine, and strychnine are all useful drugs.

Huchard recommends 30 to 50 minims per diem of a solution of digitalis (1 in 1000). Finkler advises the use of camphor in heart failure, camphorated oil being given subcutaneously.

Oxygen inhalations will relieve when there is marked dyspnea. Alcohol is indicated when there is prostration and failing heart, and champagne and brandy are specially valuable. The amounts to be given must be regulated by the effects on the heart and pulse in individual cases.

The diet should consist mainly of milk, eggs, beef tea, chicken broth, rusks, arrowroot, Benger's food, and calf's-foot jelly. The hygiene of the mouth and teeth should be particularly attended to. The bowels should be acted on if necessary.

Fresh air is the best prophylactic against influenza. It is also a sovereign remedy in the treatment of both the acute and chronic manifestations of the disease in the respira-

tory tract. Nothing is more striking than the way in which influenza spreads in the stuffy and ill-ventilated hotels, in which people have usually to live who travel in search of health. Out of many hotels in a well-known health resort, the writer knows of one only in which the visitors escaped influenza during several winters, and that was a hotel in which, thanks to the presence of a doctor, who knew the value of fresh air, the windows in the public rooms and lounges were kept constantly open. How long it will be before the general public in this country will come to recognize that open windows are health-giving, instead of being dangerous, one cannot tell. The people who have been brought up with the idea that the slightest breath of air which comes into a house from outside may give them a chill are not likely to change their views for all our assurances that they are mistaken. These are the people who insist on closed windows in trains and hotels, and in all places of public resort, and it is through their mistaken prejudice that influenza spreads as it does. But this is by the way. What the author wants to insist on is the advantage which accrues to the influenza patient if he is treated rationally and sensibly, and if the air of the sick-room is rendered wholesome by free opening of windows.

Many doctors still cling to the old ideas that bronchitis, bronchopneumonia, and pneumonia must be treated in a warm room, and that it is dangerous to allow the temperature of the room to get below 62° F.

But purity of the air which the patient gets to breathe is of far greater importance than its temperature. In fact, up to a certain point the cooler the air is the more invigorating and refreshing it is, and it is senseless to deny to the patient fresh air from outside, and allow him a draught of cold oxygen from a cylinder.

Open-air treatment is the best restorative in chronic influenzal respiratory affections, and the author is quite as much impressed by the results obtained therefrom in these troubles as in chronic pulmonary tuberculosis.

The author suggests some hotel or sanatorium, run on open-air lines, for the reception of non-tuberculous patients convalescing from influenza, or from some other acute illness. It would supply a felt want, and would do much to promote the rapid and complete recovery of its visitors.

THE DANGEROUS ACTION OF MERCURY ON THE KIDNEY.

It is probable that certain instances of nephritis met with in cases of long standing syphilis are less the consequence of the latter than of the treatment ordinarily employed. Clinically, at least, this appears evident, as is proved by many syphilitics, who have undergone an intense and prolonged mercurial treatment, presenting renal lesions of greater intensity than those of syphilitics who have employed mercury with more discretion. The intensive treatment without doubt has its decided indications, but when once the accidents which it was intended to control have disappeared, great precaution is necessary, and it may be questioned whether mercury, no longer finding any spirochætæ in the organism, does not at this time bring its action to bear on the cells themselves. According to the *Journal des Praticiens* of October 27, 1906, Fournier and Balzer are inclined to this opinion. However, the difficulty is to know when the specific organism of the disease has disappeared.

There are two dangers surrounding the treatment of syphilis, namely, giving too much mercury and giving too little, and a careful observation of the case alone allows one to avoid them. It is quite certain that the kidneys are exposed to great danger by the absorption of mercury, and the lesions set up from this drug are more frequent than is generally believed. Acute nephritis, due to mercurial poisoning, has been described, but less importance has been attached to interstitial transformations, and these, quite evident from a microscopical standpoint, are no less so from the experimental side. Progressive in development, these lesions have no other origin than the

absorption of mercury. Clinically, the same may be said.

In the chronic types of nephritis it is difficult to elucidate the action of mercury on the evolution of the process. There certainly exists a syphilitic nephritis in both the secondary and the tertiary period, demonstrated by the presence of albumin in the urine. Now, secondary and tertiary syphilitic albuminuria are generally influenced favorably by a mercurial treatment, and in its turn the latter is quite capable of producing albuminuria; therefore it is not easy to decide whether syphilis or mercury is the factor. There are several symptoms, however, which generally enable one to form an opinion. Syphilitic albuminuria may be accompanied by other manifestations of the pathological process, and if these are wanting the action of the treatment will demonstrate its nature.

Urinary disturbances are usually bettered by mercury when the drug is given with prudence. In point of fact, there are very acute cases in which the renal epithelium has undergone a very general degeneration, and there no longer exists enough sufficiently normal tissue to assure both the elimination of the syphilitic toxins and that of the mercury. Consequently the medicament should be administered with precaution, observing the effects produced, and if the patient improves its use should be continued. On the contrary, if during a mercurial treatment the albuminuria increases, and especially if a large number of casts are eliminated and the albuminuria increases in intensity, treatment should be suspended. It is quite true that competent authorities have pointed out that mercurial albuminuria is slight in amount, a fact which distinguishes it from the albuminuria of syphilitic nephritis; and still more, mercurial albuminuria is preceded by polyuria. All this is quite true, but not infrequently any precision in diagnosis from such indications is lacking. We do not refer to the condition of the gums, which is not sufficient, and the only proper way is a daily analysis of the urine in order to be sure of one's ground.

So far as tertiary nephritis is concerned, we must be more reserved. Frequently the renal lesion, which is attributed to syphilis, is of an entirely different nature and merely indicates involvement of the kidney, due to premature senility the result of syphilis. To give mercury under these circumstances is to expose oneself to disasters, and all the phenomena of renal insufficiency will arise, dyspnea being the first to show itself. The use of mercury should be suspended at once, and theobromine, with a milk and vegetable diet deprived of salt, should be prescribed. Huchard has particularly insisted upon this point.—*New York Medical Journal,* Dec. 29, 1906.

POISONOUS PLUGS IN INFANTS' FEEDING BOTTLES.

Mr. F. A. Pond contributes an interesting communication to the *Lancet* of December 22, 1906, in which he ascribes the lead poisoning of certain infants who came under his care to the presence of lead in the rubber plug of the feeding bottle. In three cases the most marked symptom was evidently, he says, abdominal pain causing a deal of straining, drawing up of the legs, and crying. The fourth case was one of profuse diarrhea with offensive odor, the temperature was 102° F., the pulse was thready and rapid, and there was very early collapse, resulting in death a few days after the child was seen. A sign noticed in all cases was a narrow, bluish, punctated line on the edge of the gum of the lower jaw. All the babies were being fed from the same pattern feeding-bottle fitted with a pure rubber teat and a dull, black-colored plug or valve. The cavity in one of the plugs was filled with malodorous decomposed clotted cream, and had evidently been used in this foul condition for days. The baby using this plug was the one that died. The others recovered after the removal of the plugs. The lines remained on the gums for weeks.

Mr. Pond found that these black rubber plugs were made with lead. One of the plugs which Mr. Pond kindly sent was sub-

mitted to analysis, with the result that it was found to contain no less than 5.77 per cent of lead with 1.16 per cent of copper. The plug weighed just under 50 grains, so that the actual quantity of lead present estimated as metal was 2.88 grains, and of copper, also estimated as metal, 0.58 grain. The plugs in the feeding bottles were very sticky, adhering to everything they touched, and blackening the fingers. It is, therefore, easily conceivable that the lead would contaminate the milk and be imbibed by the child. Dirty conditions apart, which alone may quickly render milk septic and thus account for the onset of diarrhea of the kind described, the use of lead and copper compounds in any part of a feeding apparatus is highly reprehensible.—*Lancet,* Dec. 22, 1906.

DIGITALIS PREPARATIONS.

It is an old experience that digitalis leaves are very variable in their activity. Withering, who did so much to encourage the use of this remedy, insisted that the leaves should be gathered only at the time of the plant's blossoming, not in moist weather, and should be dried carefully at not too high a temperature and kept in a dry place. Further observations have shown that wild plants alone are valuable, and that those which grow in sunny spots contain more active principle than those which grow in the shade; and Focke, in a most thorough investigation (*Therapie der Gegenwart,* 1902, p. 44), showed that there were regular variations in therapeutic efficiency in the leaves during the time of their development, leaves gathered early in the year being only one-fourth as active as those gathered late in the summer. The importance of many of these and other significant facts was not lost to the revisers of the last edition of the United States Pharmacopœia, and the progressive druggist should know the essential features of leaves which come up to the standard.

One feature of this study has been somewhat neglected, and in view of the wide use of dry preparations (tablets, etc.) of digitalis, a research of E. Wang (*Festkrift tillegnad Olof Hammarsten,* Upsala Läkareforenings Förhandlingen, xi) is of immediate practical interest. He sought to determine what changes took place as the leaves themselves after gathering grew older, for which purpose extracts made from the leaves gathered from the years 1884 to 1906 were carefully tested on frogs, and the activity of the glucosides determined.

Focke's contention that if good leaves were carefully dried and powdered and kept in dry and sealed containers they lost very little of their efficiency, was confirmed by the author's researches, but he found that leaves which were kept in the ordinary manner rapidly deteriorated. Thus, those gathered in 1903 had lost one-half of their strength as contrasted with those gathered in 1905. Inasmuch as the leaves of digitalis are highly hygroscopic, enzymes that break down the glucosides act very readily on those exposed to the air and its moisture. It is not at all improbable that many tablet triturates of digitalis, which are notoriously untrustworthy, deteriorate by reason of precisely the same enzyme reduction.—*New York Medical Journal,* Dec. 29, 1906.

THE DIETETIC TREATMENT OF DIABETES MELLITUS.

Max Einhorn in the *Journal of the American Medical Association* of December 29, 1906, writes on this subject, and after discussing various points in diet asserts that an absolute meat and fat diet can be borne for only a short period. Such a diet should, however, be about as follows:

Strict Diet.—8 A.M., two eggs, butter, tea; 11 A.M., ham, wine; 1 P.M., beef tea, 200 grammes of meat or fish, one egg, lettuce or spinach; 4 P.M., coffee, two eggs and butter; 7 P.M., three eggs fried in lard, or fish with eggs or cold roast.

A trace of sugar is contained even in this diet, but it hardly amounts to over one per cent. By the addition of some milk and cream this diet may be made a little more agreeable, although the quantity of sugar is greater.

Such a diet may be put together about as follows:

Intermediate Diet. — Breakfast: 200 grammes of milk with 50 grammes of cream, two eggs, butter, and 100 grammes of roast. Dinner: 200 grammes of meat or fish with asparagus or peas, salads; 4 P.M., 200 grammes of milk with 50 grammes of cream. Supper: Four scrambled eggs with 120 grammes of ham.

C. von Noorden determines first how much carbohydrate a patient can assimilate, and allows about half of this. Such a procedure appears very rational, but can be conducted only in special clinics and not in general practice. It is best to arrange the diet according to customary principles, varying it slightly to fit the individual requirements of the patients. Whether or not a diet agrees with the patient can best be determined by noting the diminution of the quantity of sugar, as well as the total daily quantity of urine, and secondly and mainly by the patient feeling better and stronger.

According to the experience of most clinicians, it is best to permit diabetics a certain, although limited, amount of carbohydrates.

Seegen's diet list for diabetics is probably the best known, and therefore the writer quotes it in full:

These solids are allowed in any quantity: Meat of every kind, smoked meat, ham, tongue, fish of every kind, oysters, mussels, crabs, lobsters, meat jellies, aspic, eggs, caviar, cream, butter, cheese, and bacon. Of vegetables: Spinach, lettuce, endive, Brussels sprouts, pickles, fresh asparagus, watercress, sorrel, artichokes, mushrooms, nuts.

Allowed in moderate quantity: Cauliflower, carrots, turnips, cabbage, green beans, berries, such as strawberries, raspberries, currants, also oranges and almonds.

Forbidden absolutely: All foods made from flour or meal; bread is allowed in moderate quantities, according to the physician's orders; sweet potatoes, rice, tapioca, arrowroot, sago, grits, vegetables, green peas, cabbage, sweet fruits, especially grapes, cherries, peaches, apricots, plums, and dried fruit of every sort.

Beverages.—Allowed in any quantity: Water, soda water, tea, and coffee. Of wines, Bordeaux, Rhine wine, Moselle, Austrian and Hungarian table wines—in a word, all wines that are not sweet and that do not contain more than the average amount of alcohol.

Allowed in moderate quantity: Milk, butter, beer, unsweetened almond milk, lemonade, without sugar.

Forbidden: Champagne, sweet beer, cider, fruit wine, sweet lemonade, liquors, fruit juices, water-ices, sorbets, cocoa, and chocolate.

In general, the author uses about the same diet as Seegen, and gives the following:

	Calories.
Breakfast:	
Three eggs	240
Half a roll (20 grammes)	50
Butter (30 grammes)	251
Coffee (150 grammes), milk (100 grammes), cream (50 grammes)	203
Dinner:	
A plate of soup (200 grammes), with egg	85
Meat (200 grammes)	200
Half a roll and butter (15 grammes)	175
Asparagus with butter sauce (salad)	30
Supper:	
Oysters or fish (100 grammes)	100
Three scrambled eggs with butter (15 grammes)	365
Half a roll with butter (15 grammes)	175
Westphalian ham (50 grammes)	200
Apples, tea and cream (50 grammes)	138
	2212

Various diet cures have proved of value in diabetes. Of these the best known are the "milk cure" of Winternitz, the "potato cure" of Mossé, and the "oatmeal cure" of von Noorden.

Whereas Mossé's potato cure has not proved of much value, the other two cures are useful in suitable cases. They should not be extended over too long a time because a too limited diet is harmful if continued too long. Winternitz's milk cure consists in the patient exclusively taking milk (about four quarts daily).

Von Noorden recommends his oatmeal

cure, especially in grave cases of diabetes. He uses either Knorr's oatmeal or Hohenlohe's oatmeal flakes. This substance is boiled in water for a long time with a little salt; while boiling butter and a vegetable albuminoid, or, after cooling, the beaten white of eggs, are added. Roborants may be employed for this purpose with good advantage. The daily quantity is 250 grammes of oatmeal, 100 grammes of albumin, and 300 grammes of butter. The soup prepared in this manner is given every two hours. Cognac or wine or black coffee may also be permitted.

No matter what form of diet is instituted, it is always essential to see that the quantity of food is sufficient. In this respect fat (butter, cream, oil, lard) is of more importance here than in other conditions. Alcohol, taken moderately in the shape of whisky, cognac, or wine, is also of value. The body receives in the first place more fuel (as 50 grammes of alcohol, which may be put down as the daily quantity, contains about 350 calories); and secondly, because the patient, with the addition of wine, can take more of the greasy food than without it.

SCHLOSSER'S TREATMENT FOR TRIGEMINAL NEURALGIA.

KILIANI in the *Medical Record* of December 29, 1906, describes, in short, the technique of this plan of treatment. To make sure that one really injects into the nerve affected with neuralgia, Schlösser injects into the foramen through which the respective branch emerges into the face, namely, for the first branch the foramen supraorbital, for the second the infraorbital, and for the third the dental inferior. For this purpose Schlösser has devised for his syringe a set of needles of such thick tubing that the edge does not cut at the point of the needle. In that way no arteries, or even veins, are injured by the injection, incredible as it may seem. This point is of special importance, if the injection has to be made into the ganglion of Gasser, in case all three branches are affected. It is impossible to describe the technique exactly, at least in a short paper. It must suffice to say that, in case of an injection into the supraorbital foramen, the needle, being pushed sagittally along the sometimes not very well-defined foramen, must not penetrate the periosteum of the orbit; otherwise the alcohol injected would produce a very pronounced and possibly dangerous retrobulbar edema.

The injection into the second branch is really the easiest, and does not involve any danger.

The injection into the third branch presents the most difficulties—at least, it has given the author the most trouble. The use of the curved needle devised for the third branch has been given up by Schlösser to a great extent, for reasons which one can appreciate, as it is extremely difficult to feel around the corner, so to speak, in an operation where everything is dependent on the sense of touch.

A successful injection into the inferior dental foramen invariably produces a more or less pronounced tetaniform spasm of the pterygoid and masseter muscles, a mild form of lockjaw, which may last from several days to several weeks. As it is only partial, the patients, who are more or less accustomed to this state of affairs, are quite willing to put up with the condition, if warned beforehand.

To inject into the foramen ovale the following procedure is used: The longest of the three straight needles is pushed through the cheek of the afflicted side about opposite the last molar, the index-finger of the left hand is inserted into the mouth as a guide behind the last molar, and the needle then shoved under the periosteum upward along the external pterygoid plate until it is arrested, which takes up about 2¼ inches of the needle. If the handle of the needle, so to speak, is still further lowered, another quarter of an inch can be gained in pushing the needle still further upward toward the base of the skull, when it is definitely arrested. If we feel our way then backward, scraping along the bone for about three-eighths of an inch, we feel how the needle enters the foramen ovale, where

the injection takes place. It would lead a little too far if the author were to try to explain how the foramen rotundum is reached without injury to the neighboring parts; but it can be safely done.

One understands at once that the technique is a peculiar one, and has to be acquired, as far as possible, on the cadaver, although one is surprised at the difficulties one meets after apparently mastering the technique on the cadaver.

But the technical difficulties, great as they are, are not the only ones. The principal thing is the clinical experience which enables us to judge which branch to treat, one or several, or when to attack the ganglion. This is one of the reasons why Schlösser so far has not described his method in detail, because he feels that if it is to become the common property of surgeons and physicians, the minutest rules will have to be given to meet all purposes. This he is doing now by writing a treatise, which will be published soon, and of which he has asked the author to prepare an English edition.

The injection is done without narcosis: first because it is really not overpainful, and secondly because one needs the help of the patient in determining whether a small test injection produces a tingling sensation along the course of the nerve.

The result of a successful injection is at once apparent; for a minute or two there is a sharp, burning pain, similar to a mild attack, to which the patients, who are accustomed to such suffering, do not much object. After an hour or so there is sometimes quite severe pain for one or two hours, interrupted by typical attacks. Three to four hours after injection, at the very most, the patients are surprisingly comfortable. In one of the author's cases the patient, who had attacks every two minutes, and who needed a day and night orderly to prevent him from committing suicide, was after the first successful injection free from pain for the first time in years, and slept all night without the administration of any drug, while previously all known sedatives and anodynes, given in dangerously large doses, had proved of no avail. This first injection is usually followed after twenty-four hours by a second one, if the edema is not in the way; a third one the next day; and, if necessary, a fourth one a few days later. Then these patients are cured until the recurrence sets in. This takes place after ten to twelve to fourteen months. Then the attacks are much lighter, and yield to one or two injections.

This brings us to another point: we know that all treatments, even including gasserectomy, are liable not to prevent recurrence; that treatment is the best which permits repetition.

The injection, if executed by a specially trained and skilful surgeon, guided by experience, is without danger, and in its effect is little short of marvelous.

ICE-WATER ENEMATA IN THE TREATMENT OF SUNSTROKE.

In the *Journal of the Royal Army Medical Corps* for December Captain M. F. Foulds, R.A.M.C., has called attention to a little known treatment for sunstroke suggested to him by Captain W. A. Heppolette, Indian Subordinate Medical Department—namely, iced-water enemata. In Jhansi, India, in 1903 he saw his first cases of sunstroke, which were all of the same type. The thermometer ranged from 105° to 115° F. in the shade. Nine men were taken into hospital unconscious and with deep and stertorous breathing, dry, burning skin, rapid pulse, and a temperature of from 107° to 110°. They were stripped and put to bed in the shade. One attendant poured water over them, as cold as could be obtained, and two others rubbed the body with ice. An enema of about a quart of iced water was given every ten minutes until the axillary temperature fell to 102°. The back of the neck was blistered. All the patients recovered, and Captain Foulds thinks that they owed their lives to the use of the enemata. Six other men were taken into hospital drowsy and complaining of pains in the head and dizziness and with temperatures varying from

103° to 105°—*i.e.*, with all the prodromata of sunstroke. They were treated with iced-water enemata and left the hospital quite well on the following morning.

Captain Foulds advocates this treatment of sunstroke on the grounds that when a person is hot and wants to cool himself he takes an iced drink. The patient suffering from sunstroke is generally unconscious or nearly so, and it is much easier and safer to administer iced enemata than to wash out the stomach with iced water. Professor Osler advises packing the patient in a bath of ice, and says that iced-water enemata may also be administered. Sir Patrick Manson advocates only external application of cold. Captain Foulds points out that in India ice is not issued in such quantity as to enable every patient suffering from sunstroke to be packed with ice, and that it takes very little ice to cool a quart enema.

The statistics of sunstroke in India show a high mortality. In 1900, 174 patients suffering from sunstroke were admitted into hospital, of whom 40 died; in 1901, 157 were admitted and 37 died; in 1902, 171 were admitted and 16 died; and in 1903, 307 were admitted and 54 died. When these results are compared with those of Captain Foulds, his claim that if the treatment advocated by him were better known the mortality of sunstroke would be diminished seems to be reasonable. He also makes the suggestion that the treatment might prove useful in hyperpyrexia, such as occurs in rheumatic and scarlet fever and tetanus.—*Lancet*, Dec. 22, 1906.

INFANTILE DIARRHEA, WITH SPECIAL REFERENCE TO THE USE OF "LACTATED MILK."

In the *Clinical Journal* of December 19, 1906, BATTEN says that the preparation of lactated milk is a matter of no great difficulty, but requires a good deal of care and attention to detail. He describes what he has found to be the simplest, easiest, and most successful means, and then mentions some of the difficulties and failures.

Fresh milk is obtained. This is boiled in a saucepan or, what the author has found most convenient for a small quantity, a "Gourmet milk sterilizer" in order to sterilize it. The boiled milk is now decanted into a sterilized bottle and the stopper closed. The milk is then stood in cold water until the temperature has fallen to 96° F. To every 11 ounces of milk one tube (about 3 drachms) of the fluid "lactobaccilline" (lactone tablets in U. S.) is then added, and in order to mix it with the milk the bottle is well shaken. The bottle is stood in a water-bath or incubator at the temperature of 96° F. for seven hours; during this time the milk becomes sour, and a clot more or less firm is formed in the milk. At the end of this period the milk is like a feebly-set junket. The bottle is now removed from the bath and is placed in the ice chest, and here it remains for twelve hours; during this period the clot undergoes some solution, and at the end of the period a creamy fluid is obtained which is sour in taste but is quite agreeable to drink, and most children will take it readily when diluted with water and a small quantity of sugar added. According to the preparers of the "lactobaccilline" this dissolution of the clot should not take place, and the milk which is prepared by them remains in a solid condition, but can be broken up with a spoon and can be drunk out of a tumbler.

The writer has thought it not improbable that the liquefaction of the clot formed was due to the action of a "liquefying" lactic acid bacillus which had a low optimum temperature (see Conn, "Bacteria in Milk and its Products," page 71).

Whatever was the cause of the liquefaction of the clot it did not impair the efficiency or taste of the milk, and it occurred with such regularity that the author was of the opinion that it must be due to something contained in the liquid "lactobaccilline."

He has had failures in the preparation of the milk; on one occasion the milk became bitter, due apparently to butyric fermentation, and on another gas was formed from the presence of yeast. On another the milk would not clot. He has endeavored

to carry on the process of lactic acid fermentation from one specimen of prepared milk to another. This is not attended with success, chiefly because it is impossible to completely sterilize the milk in the first instance by boiling, and during the process of lactic acid fermentation the spores of other organisms become developed, and develop actively in the second milk inoculated.

The question will rightly be asked, What is the organism which gives rise to the formation of lactic acid in milk? There are numerous organisms of different types which have the power of producing lactic acid in milk; some of these are harmless, others are pathogenic. In the preparation of "lactobaccilline" two organisms are present: (1) a long rod bacillus growing in chains, Gram-staining, and known as the bacillus acidi lactici, Bulgarian variety; (2) a short rod, or streptococcus acidi lactici, European variety.

The first is the most active in formation of lactic acid, but if allowed to act alone gives rise to a too acid taste to the milk.

INTESTINAL PERFORATION BY FOREIGN BODIES.

MENNACHER (*Münchener medicinische Wochenschrift,* No. 52, 1906) reports a duodenal perforation by a hairpin which was too long to pass the angle made by the junction of the descending and ascending portions of the gut.

The patient, a girl six years old, had swallowed a hairpin 3½ inches long four months before, and although it had not been seen in the stools the parents thought it must have come away, and had almost forgotten it.

The symptoms of perforation were ushered in by sudden severe cutting abdominal pain and recurrent vomiting, abdominal rigidity, and tenderness. Respiration was costal and rapid, pulse 133, temperature 101° F.

The attack resembled appendicitis, but a radiogram showed the hairpin lying points upward at the lower border of the second lumbar vertebra. Operation was deferred because the pulse, respiration, and temperature fell to normal and the pain ceased, the child sleeping well all night. On the day following, however, the symptoms of a progressive peritonitis were obvious. On operation the blunt end of the hairpin was found to have perforated, most of the foreign body lying without the bowel. Death, incident to the purulent peritonitis, followed in a few hours. It was demonstrated at the autopsy and by a study of other bodies that a body as long as the hairpin could not pass the duodenal angle without tearing the mesentery. The author notes that a remission of the symptoms about twelve hours after intestinal perforation is quite common.

PUERPERAL INFECTION INCREASED BY ANTISEPTIC DOUCHES.

Comparison of labor cases which were given a douche of one quart of 1 to 1000 bichloride immediately before labor with cases not so treated convinced BAISCH (*Archiv für Gynäkologie,* Band 79, Heft 2, 1906) that the antiseptic did harm.

Of the cases treated with the douche 12.8 per cent had puerperal fever as compared to 8 per cent of those not treated. Bacteriologic study of the lochia showed a much greater number of streptococci in the douched cases, while the harmless bacteria were much diminished. The author concludes that antiseptic douches increase the liability to septic infection.

THYROID GLAND—SUCCESSFUL TRANSPLANTATION.

The failure of previous attempts to transplant this organ is ascribed by CRISTIANI and KUMMER (*Münchener medicinische Wochenschrift,* No. 49, 1906) to the large size of the pieces transplanted. They found that if very small pieces of normal thyroid of the same species were implanted immediately after removal they would take root and in some cases show marked physiological hypertrophy. In twenty-six cases in man the operation was completely successful, and in one case pieces of the gland excised after three years showed a marked increase in normal thyroid tissue.

LESIONS OF THE BRAIN—EXPLORATORY PUNCTURE.

In cases of brain lesions which appear to be localized, but whose exact location and nature are uncertain, Ascoli (*Berliner klinische Wochenschrift,* No. 51, 1906) explores the suspected parts with a hypodermic needle mounted on a large syringe and inserted through a hole bored in the skull by a dental engine carrying a fine drill.

The skull over the suspected part is exposed by a small incision, and a small drill is applied at right angles to the skull. Great care must be exercised to stop the motor the instant resistance ceases as the dura must not be injured. As soon as the bone is penetrated, the handle is removed from the drill, which is left in position as a guide. Great care is necessary when the drill is removed, as the least slipping of the soft parts may conceal the hole, which owing to its small size is difficult to find. The drill having been withdrawn and replaced by the needle of the syringe, this is pushed carefully forward, the piston being drawn back slowly until liquid appears. If the puncture is negative another is made at the next suspicious spot, and this may be repeated as often as desired, no harm being done if the meningeal vessels are avoided. In this way abscesses, cysts, hemorrhages, necrotic tumors, tuberculosis, and even gliomata may be located, the nature of the mass being determined by microscopic study. The depth to which the needle may be pushed depends on the case, but ordinarily it is not wise to push it beyond a depth which could be reached by operation if the mass were of a nature demanding removal. This operation has the advantage over the exploration by removal of a skull flap that it is less harmful and covers more ground.

DRAINAGE AFTER ABDOMINAL OPERATIONS.

Threads of catgut are used as drains by Hans (*Centralblatt für Chirurgie,* No. 47, 1906), who claims that they have sufficient osmotic power without requiring a large opening in the abdominal wall with its danger of hernia.

Drainage is most often required in operations which leave a stump the end of which is ligated and therefore liable to gangrene. In such cases he ligates the stump with silk and sews the peritoneum over it with chromicized catgut, one or more strands of which are left long and drawn out through the abdominal incision, which is entirely closed. These threads serve as drains as long as necessary, and then can be withdrawn as the inner end is absorbed and they are freed. If it is necessary to reopen the abdomen the thread serves as a guide to the source of trouble. The same method can of course be used in operations requiring drainage in other parts of the body.

CHRONIC HYDROCELE—DIAGNOSIS OF TUBERCULAR.

On the study of fifty-eight cases Wijnhausen (*Centralblatt für Chirurgie,* No. 52, 1906) bases conclusions regarding the microscopic characters of the aspirated fluid. He finds in ordinary hydrocele very few lymphocytes and only a small number of endothelial or other cells. If many cells, and especially many lymphocytes, are found in the fluid the disease is almost certainly tubercular. The therapeutic indications from these findings are comparatively clear.

FRONTAL SINUS EMPYEMA—INTRANASAL OPERATION.

On looking at a longitudinal section of the skull just alongside the nasal septum, one sees that the anterior part of the nasal cavity is separated from the frontal sinus which lies directly above it by a wedge-shaped mass of bone, the base of which passes into the nasal bone. This mass consists of the crest of the nasal bone and the expanded part of the base of the nasal spine of the frontal bone. It is this wedge-shaped projection which Halle (*Berliner klinische Wochenschrift,* No. 43, 1906) proposes to remove in its entirety.

For this purpose he uses a series of burrs driven by a dental engine and prevented from going too far back and injuring the

brain by a corresponding series of curved groove directors. A probe is first inserted in the nasofrontal duct, and a director is passed in along the probe, which is then withdrawn. The convex surface of the director is backward, guarding the floor of the brain. A straight burr with a cutting end is then driven into the nasal sinus along the groove, cutting into the base of the nasal spine. The field of operation must be kept in view at all times to guard against the burr slipping off the director. As soon as the opening is large enough the sharp burr is removed and replaced by one dull on the end, which can be safely used until the opening is quite large, and which should then be replaced by a pear-shaped burr which cuts only with its proximal half. In this way there is no danger of injuring the internal table. The same method may be used to clean out the ethmoidal cells. It is necessary to have an assistant press his finger deep into the orbit in order to control the burr when it approaches the orbital wall. The external operation is indicated if the nasofrontal duct cannot be sounded or if the internal operation does not give complete relief, as diseased bone can be removed more thoroughly by the external route.

BRAIN TUMORS—PALLIATIVE OPERATION.

In case of brain tumor so large or so situated that it cannot be removed by operation SAENGER, following the teaching of Cushing (*Centralblatt für Chirurgie,* No. 47, 1906), recommends the removal of a portion of the skull-cap to relieve pressure.

The trephining should be performed as close as possible to the growth, or when this cannot be located, over the right parietal lobe, as this is the safest place. The indication for operation is beginning choked disk, as not much benefit is to be expected in advanced cases. The defect in the skull is best covered with a flap of muscle when possible. Of nineteen cases operated on in this way sixteen showed great improvement, two were not benefited, and one died immediately after the operation. The benefits of the operation are seen especially in relief of pain and in regression of the optic nerve atrophy.

CARCINOMA—ARTIFICIAL IMMUNITY.

A series of experiments on mice are reported by SCHOENE (*Münchener medicinische Wochenschrift,* No. 61, 1906), who has determined the influence on implanted tumors of extracts of various organs and tissues administered beforehand.

He found that mice injected several times with a suspension of mouse embryos of any age were very resistant to the carcinomas, as were mice injected with human cancer cells. The suspension of chick embryos and of mouse liver and testicle had no protective influence.

TUBERCULOSIS OF THE SEMINAL VESICLES—TREATMENT.

The indications for removal of the seminal vesicles are considered by BAUDET and KENDIRJY (*Revue de Chirurgie,* Nos. 9 to 12, 1906).

The condition is always associated with disease of the testicles and vas deferens, although its severity bears no relation to the extent of these lesions and both vesicles may be involved in one-sided orchitis. The symptoms are not striking as a rule. There is usually vesical tenesmus, and there may be rectal tenesmus and pain at stool. Examination reveals an obliteration of the groove normally felt between these organs and the prostate gland. Occasionally there is a fistula leading to the perineum. The prostate is enlarged in about one-third of the cases.

Treatment may not be necessary in early cases, the lesion healing spontaneously after castration. If, however, there is a fistula or extreme difficulty at stool, or if the organ is as large as the last joint of the thumb, it should be removed, unless there is tubercular disease of the bladder or kidney, which may be looked upon as contraindications. The operation of choice is perineal by a Y-shaped incision, the shaft of the Y pointing forward in the middle

line and the arms embracing the front of the anus. The technique of this and of all other operations which have been proposed for the removal of the vesicles is given in detail.

ANESTHETIZATION FOR OPERATIONS ON THE URINARY ORGANS.

MORTIMER (*West London Medical Journal*, January, 1907) states that there are probably no operations, even those involving the air-passages, in which the skill of the anesthetist is more severely tested than in cases of prostatectomy, and he is quite fixed in his mind that ether alone is an unstable agent for producing anesthesia. The A. C. E. mixture is the one of his preference. He states that the trouble for which the anesthetist must be particularly on the alert occurs at an early stage when the bladder has been distended, and before the actual removal of the prostate. This distention causes shallow, hesitating breathing, with prolongation of expiration, accompanied in bad cases by disturbance of the pulse, and even by failure of both pulse and respiration. These symptoms are relieved by a prompt opening of the bladder. A case is recorded from the practice of another anesthetist in which pulse and respiration ceased as the result of vesical distention, but resumed when this viscus was opened.

The author notes that he has had two similar experiences. He holds that the process of enucleation acts as a powerful respiratory and circulatory stimulant, the effect of which is at once noted in the deepened breathing and fuller pulse. If, however, the patient is in poor condition, or the enucleation prolonged, it is probable that these favorable signs will not appear, or will be replaced by those of depression and shock. An especial difficulty is that incident to rigid contraction of the recti and levatores ani muscles, which may be set up in conjunction with the contraction of the bladder, or immediately the surgeon begins to enucleate. This the author states may extend to the muscles of the lower jaw, tongue, and larynx, and must be regarded as peculiar to the operation, occurring in spite of the patients being fully under the anesthetic and persisting sometimes even when this is pushed to a dangerous degree.

In kidney operations the author apparently regards ether as objectionable not so much because of its irritating effect on the kidneys, as from the fact that when patients are in the lateral position, even when an arm-rest is used, the chest movements are more hampered than in the supine position and consequently accumulation of mucus is likely to occur. Mortimer notes as a complication of renal operations that when the kidney is pushed from the front there often results a gush of fluid from the stomach, accompanied by little if any retching.

TREATMENT OF UREMIA.

RUSSELL (*West London Medical Journal*, January, 1907) advances strong arguments in favor of the proposition that the cerebral manifestations of uremia are dependent upon cerebral anemia produced by an increase in intracerebral tension resulting from cerebral edema. He cites the excellent effects which have been reported as the result of lumbar puncture practiced for the relief of uremia. The promptitude with which the improvement has occurred after such a procedure has been such as to leave no doubt in the minds of observers that the relation was one of cause and effect. It is also noteworthy that in most of the cases the cerebrospinal fluid escaped under considerable pressure, though McVail states that in neither of his cases was this the case, the fluid merely dropping away. Russell believes that lumbar puncture should be performed in cases of uremia in which coma, convulsions, or really severe headaches are the dominant features, and that the presence of a high blood-pressure would be helpful as indicating the advisability of this procedure. He has no explanation to offer for the material improvement that sometimes undoubtedly follows venesection, since this by lowering the blood-pressure would act in opposition to the compensatory mechan-

ism which maintains the cerebral circulation in the presence of the high intracranial tension, and so should be a harmful rather than a beneficial procedure. It is possible, however, that the benefit which sometimes follows its employment is due to the relief of the failing heart with right-sided distention.

HYPERPLASTIC TUBERCULOUS PERICOLITIS.

KIDD (*Lancet*, Jan. 5, 1907) contributes a study of a peculiar form of tuberculosis involving segments of the intestinal tube and characterized by thickening of the submucous, muscular, and subserous coats of the bowel, without exhibiting either tubercles or caseation. Superficially it resembles a true neoplasm. The seat of election is the ileocecal region, though it may be found in any part of the large bowel, especially in the sigmoid flexure, in the rectum, and occasionally in the ileum. The mesenteric glands which drain the area of affected gut may undergo a similar change or may exhibit the usual picture of gland tuberculosis. In the rectum it has been mistaken for tertiary syphilitic thickening. A similar hyperplastic tuberculosis is observed in other tissues, such as the larynx, pleura, and lymph nodes. To the naked eye there are two types, the submucous and the subserous. The latter can be distinguished at once from neoplasm. The submucous may, however, closely simulate tumor. The submucous type markedly diminishes the lumen of the gut, producing partial stricture, which may be multiple and aggravated by the presence of polypi. Ulcerations of the mucosa may or may not be present. Polypi, which may be single or multiple, are a frequent complication. The submucosa is much thickened, presents a peculiar bluish or whitish-gray, translucent appearance, and resembles cartilage in hardness and translucency. It is distinctly harder and more translucent than the submucous thickening seen in malignant ulceration. The muscular coat is thickened even beyond the stricture, so that there would appear to be true hyperplasia of the muscle elements stimulated by the mild bacterial poison. This layer stands out sharply owing to its brown coloration. The subserous coat is immensely thickened and consists of translucent bluish or gray fibrous tissue of extreme hardness surrounding yellow areas of highly developed fatty tissue, which pass insensibly into one another. These do not in the faintest degree resemble patches of fatty degeneration or caseation, though the latter are sometimes seen as tubercles, rarely however. The serous coat, though slightly thickened, exhibits a smooth surface and is not adherent to surrounding structures. The whole mass is extremely vascular, free capillary bleeding taking place on section. The new vessels are mostly capillaries and are masked by the increase in the fat, so that the general color of the tumor from the outside is yellow. Secondary infection may lead to acute suppuration and gangrene.

The subserous type exhibits little, if any, submucous thickening, the infiltration lying entirely in the subserous coat, thus differing entirely from carcinoma. The condition differs from ordinary tuberculosis in the fact that there is often no ulceration, or if this be present, it is irregular, covers a large area of gut, and is not multiple, nor is it confined to the distribution of the lymph follicles. The fibrous polypi if present are characteristic. Miliary tubercles are seldom seen and caseation is rare. Most cases have occurred during middle life. Cases under twenty are rare. Any disease which lowers the general resistance of the organ, or an occupation which necessitates repeated pressure on the abdominal walls, predisposes to this affection. The proof that the tubercle bacillus is the exciting cause is based on the fact that these organisms have been found in the tissues in large numbers. In some cases some part of the tumor has shown ordinary caseous and giant-cell tuberculosis, while another part has shown the hyperplastic appearances. Portions of the growth injected into guinea-pigs have led to tuberculosis. In the majority of cases there has been found an old chronic tuberculous

focus in the lungs. Advanced tuberculosis of the lungs has in these cases usually been absent, such a condition being associated with multiple tuberculous ulceration of the lymph follicles of the gut.

The theory of the development of this particular form of inflammation is that the gut becomes infected with an attenuated form of the tubercle bacillus, usually by means of swallowed sputum from a small healing cavity in the lung. The patient is fairly resistant to the tubercle bacillus, as shown by the state of lung lesion. The gut becomes infected at some spot where the feces tend to stagnate, as in the cecum or sigmoid flexure. The patient being resistant and the bacillus weak, hyperplasia occurs rather than necrosis.

The author has proven by experiment on animals that tubercle bacilli can make their way into the connective tissue spaces and lymphatics of the gut without a breach in the epithelium. The microscopic picture is sufficiently characteristic for the diagnosis to be framed even though tubercle bacilli cannot be demonstrated. The symptoms sometimes are entirely latent, sometimes simulate an appendicitis with local persistent exudation; at other times there are symptoms of chronic intestinal obstruction with acute exacerbations, with or without palpable tumor. The diagnosis is then apt to be made of malignant disease of the colon. Or there may be obscure symptoms of colic, with a sudden attack of purulent peritonitis, localized or diffuse. The stools may contain mucus or even blood, but usually do not do so. The tumor itself may simulate carcinoma, sarcoma, actinomycosis, excessive exudate caused by appendicitis, and a fecal tumor. In carcinoma the distinction is made by the very slow development of the symptoms and the absence of blood and mucus in the stools. Marked tuberculous family history and the presence of tubercle elsewhere might be suggestive.

The treatment is excision, the diagnosis being made not only by macroscopic appearance but by microscopic examination.

REMOVAL OF THE GALL-BLADDER.

BLAND-SUTTON (*Lancet*, Jan. 5, 1907) considers the gall-bladder with its cystic duct as a diverticulum from the main bile-duct. He calls attention to the tendency of the gall-bladder when enlarged to drag upon the hepatic tissue, developing a tongue-like projection from the liver. He states that a study of the operation returns of the general hospitals in London shows that cholecystotomy has a mortality of about 20 per cent, and is further associated with the inconvenience of fistulæ, which may be biliary, indicating that the surgeon did not clear the main duct of concretions; which may be mucous, due to an impacted calculus in the cystic duct overlooked at the operation; or may be purulent, as a consequence of the sutures used to secure the gall-bladder to the parietal wound acting as setons. Then there is the probability that the gall-bladder may manufacture more calculi, but this is not common.

Bland-Sutton states that he has been particularly troubled in his operations by the difficulty incident to removal of stones from the cystic duct, having lost two cases, whilst in the removal of stones from the common duct he has had no trouble. Now when he finds a stone tightly impacted in the cystic duct he removes the gall-bladder and cystic duct with the impacted stone. Indeed, extirpation of the gall-bladder seems to be his routine procedure in all cases of cholecystitis. He places beneath the person's back a sand-bag 16 inches in circumference and 24 inches long; this lies at about the level of the liver. The abdomen is opened by a vertical incision through the right rectus muscle near its outer border. This may be continued upward parallel with the border of the ribs, and downward if needful. The gall-bladder is then examined, and the bile-ducts are traced out with the finger to ascertain their freedom from obstruction. The field of operation is then shut off with sterilized gauze dabs, and the folds of peritoneum which bind the gall-bladder to the liver are divided on each side with scissors or scalpel, thus enabling the sur-

geon to enucleate the gall-bladder from its bed and follow it toward the portal fissure, where it narrows to the cystic duct. This duct is carefully examined, and any impacted stone is gently squeezed into the gall-bladder, or if a calculus is tightly impacted it is left in the duct, and this structure is seized with forceps beyond the calculus—*i.e.*, near the main duct. The only vessel of importance is the cystic branch of the gastroduodenalis. The method of dealing with the neck of the gall-bladder which the author prefers consists in detaching this structure from the liver and dividing its neck near the cystic duct and leaving the duct without a ligature. Any vessel that bleeds freely is ligated or squeezed. This method is particularly indicated when the enlarged bladder contains pus or is acutely inflamed. A wide drain is inserted. In the course of ten or twelve days the bile ceases to flow along the tube and the wound quickly heals. The surgeon has no trouble with a suppurating fistula, and the patient is spared the tedium of daily dressings and watching for the appearance of a ligature. The statistical study of the operative returns from the chief general hospitals in London shows that during this period cholecystotomy was performed on 105 patients, of whom 16 died. Cholecystectomy was performed on 51 patients, of whom 9 died. Cases in which operations were performed for cancer of the gall-bladder were excluded, since Bland-Sutton holds that these should form a separate group.

ABORTION CAUSED BY X-RAYS.

In a short article LENGFELLNER (*Münchener medicinische Wochenschrift,* No. 44, 1906) cites experiments on guinea-pigs, which fully confirm those of Tellner, showing that even short exposure of the abdomen to the action of the rays is able to destroy the life of a fetus even shortly before term. Alterations were found in the ovaries suggesting sterility. The cause of the fetal death could not be determined macroscopically.

STRICTURE OF THE LARYNX—GRADUAL DILATATION.

The use of rubber tubes which remain in place constantly and exercise pressure on the inside of the larynx and trachea is praised by MARTIN and SARGNON (*Revue de Chirurgie,* No. 8, 1906), who state, however, that they can only be used safely if the patient is in good enough general condition to resist the added danger of inhalation pneumonia, and if time is not of moment. If necessary the point of stricture may be incised before the tube is inserted. In most cases preliminary tracheotomy is performed, and a tracheotomy tube is worn as long as the rubber tube is in place. The tube is introduced from above, stretched lengthwise on a catheter, and as the catheter is withdrawn it is held in place by pressure and by a thread tied around the neck. It is changed every two to four days. The only disadvantage of the method is that it takes from six to nine months to effect a cure.

HEMOPHILIA—PATHOGENESIS AND TREATMENT.

A comparative study of the blood in hereditary and spontaneous hemophilia is reported by WEIL (*Presse Médicale,* No. 87, 1906). He found that the blood in sporadic cases was thin and flowed too freely as well as too long. Clotting was very slow, but the clot once formed was of normal hardness and contracted well. The addition of calcium chloride hastened the process somewhat. The addition of a small amount of normal blood serum made the process entirely normal. The blood of cases of hereditary hemophilia, on the other hand, was found to be thick and viscid and it flowed slowly from a wound. The clotting was even slower than in the other condition, and the clot was not firm and adherent, but flocculent. The addition of calcium chloride hastened the process a little, but had no influence on the character of the clot. The addition of normal serum hastened the process also, but had no other influence on the character of the clot. The addition of such blood to normal blood delays markedly its

coagulation and renders the clot soft and friable. Intravenous injection of normal blood serum cured sporadic cases entirely, and caused some improvement in the hereditary form. These experiments show that sporadic hemophilia is due to the absence from the blood of some normal ferment or similar body, while hereditary hemophilia is due to the presence in the blood of some unknown substance which interferes with coagulation.

SOME OBSERVATIONS ON PARALYSES OF THE BRACHIAL PLEXUS.

WARRINGTON and JONES (*Lancet*, Dec. 15, 1906) state that palsies of the upper extremity due to a lesion of the peripheral nervous system, excepting the named branches of distribution, are classed as paralyses of the brachial plexus. Excluding the invasion of the roots by diseases of the meninges and vertebral column and pressure by new growths or aneurism, the common causes are: (1) Indirect violence, known when it occurs in adults as Erb's or Klumpke's palsy, or if at birth as Duchenne's palsy; (2) rarer cases of neuritis.

Bruns of 22 cases notes that only six recovered. Four of these in adults had paralysis of the upper part and one of the lower part of the plexus, all due to indirect violence. The remaining case of recovery was a severe one of paralysis from pressure during anesthesia. Of seven instances of birth palsy none recovered.

The authors state that they have had under observation 30 cases, of which 11 completely recovered. The nearer the lesion is to the spinal cord the worse the prognosis, though recovery may occur when the anterior spinal roots are damaged, providing that they are not actually severed. The damage is usually found before the nerves enter into the formation of the plexus proper, hence the forms of paralysis are usually radicular in origin.

In regard to symptomatology, pupilary paralysis results from an intravertebral lesion; paralysis of the rhomboid, serratus magnus, or levator anguli scapulæ indicates a lesion internal to the extravertebral portion, situated in either the intra- or intervertebral portion; paralysis of the supra- and infraspinatus muscles indicates a lesion before the formation of the plexus proper. The white rami for the sympathetic, stimulation of which causes dilatation of the pupil and enlargement of the palpebral fissure, are derived from the first, second, and third dorsal anterior roots, and especially from the second. Hence, though damage to the first root causes characteristic oculopupilary signs they may not be permanent. If the pupil fails to dilate when a solution of cocaine is instilled into the eye, it is probable that the lesion affects the second as well as the first root.

The authors note that birth palsy of any severity less commonly results in good recovery than the corresponding conditions in adults, and that cases due to a local neuritis are a good deal more favorable than when injury is the cause. The lesion is in general a severe one caused by laceration, tearing, or tension of nerve tissue, simple pressure being less common. They also observe that the presence of the full reaction of degeneration is compatible with complete recovery, and that if spontaneous recovery happens some signs of it are visible in seven months in adult palsy, but that in birth palsy signs of recovery may be delayed for a longer period, but are complete within a year. Partial recoveries are frequent in birth palsy, leaving the residual paralysis to be treated surgically.

The authors believe that mechanical treatment should be thoroughly persevered in before having recourse to operation. Mechanical treatment consists in keeping the overstretched muscles completely relaxed, and this must be continued without intermission for some months. The object of this treatment is to antagonize the functioning muscles and to prevent the degeneration of muscular tissue which rapidly occurs when it becomes elongated by posture. Upon this relaxation of elongated muscles the authors place very great stress, and instance two cases of infantile paralysis, in both of which the muscles of the upper arm and shoulder had been paralyzed for over

two years, while those governing the hand acted normally. A diamond-shaped flap of skin was removed from the bend of the elbow sufficiently long to fix this joint in acute flexion. In this position the hand could be utilized. In less than six months after operation it was noticed that power began to return to the flexors of the elbow, and in less than twelve months the restoration was complete. In neither case was there any recovery in the muscles of the shoulder-girdle. Therefore when the flexors of the forearm are paralyzed in the ordinary upper-arm type the wrist should be drawn toward the neck by a sling in order to keep the flexors of the elbow relaxed. If the extensors of the wrist are paralyzed the joint should be kept hyperextended in order to completely relax the extensors and stretch the flexors, thus aiding the restoration of muscular balance. Moreover, the muscles should be systematically and energetically massaged. The elbow should not be bandaged with a splint excepting over the tendons, since the pressure over the muscles is distinctly harmful. Operation may be advised if no improvement is noted after seven or eight months. As to operation on the nerves, success has followed after almost every method of junction. End-to-end union is the ideal method. Nerve transplantation, anastomosis, and nerve crossing may all be needful at times.

THE CAUSE OF COMMON BALDNESS.

PARKER (*Medical Record*, Feb. 9, 1907) includes under the title of common baldness all cases in which the hair shedding occurs independently of any other disease, and in addition is limited in its field of operation to the portion of scalp occupying the top of the head. The author holds that the cause of common baldness is the absence of upper chest breathing. This results in residual air and the development of a soluble poison which when present in the blood exerts a disturbing effect upon hair growth. The author has experimentally determined that when expired air from human beings is kept chambered in the presence of warmth and moisture long enough for decomposition to take place, there is produced a substance which when introduced into the blood of certain animals exerts a selective poisonous action upon the hair, or tissues analogous to hair, with which such animals may be endowed, and that beyond this, so far as careful observation can determine, it produces no effect whatever.

In his article are graphically pictured pigeons which after three and a half months of treatment have lost their feathers. The substance which is developed by the residual air in the lungs is called by Parker trichotoxin, which he states is not a ptomaine, nor does it produce any effect when given by the mouth. It was isolated by evaporating water which had been supersaturated by air expired from the lungs.

As practical deductions from this ingenious reasoning and experimentation of the author, he states that for a period of ten years successive groups of persons have been treated for common baldness by means of directions to practice continuously upper chest breathing. Results were satisfactory in direct proportion to the thoroughness with which the treatment was applied. When the latter was followed closely for one week, dandruff, when present, entirely disappeared and the hair assumed a natural appearance. In five or six weeks from this time new hair began to make its appearance. This new growth as a rule appeared first among the hairs about the margins of the bald areas, and after multiplying there invaded the bald patches by extension. The new growth, even after being well started, developed slowly, so that months or even years passed before a moderate sized patch of uncovered scalp became covered with new hair.

THE INTERLUDE OF CANCER.

Under this title BEARD (*Medical Record*, Feb. 2, 1907), after a most interesting discussion of cellular life and cancer research, states that the proper scientific treatment of cancer is by the enzyme, and particularly by the pancreatic one. If trypsin alone be

used bad symptoms very soon arise, all of which recall the vomiting of pregnancy and eclampsia. Tryspin alone is a very deadly remedy for cancer, because in killing the cancer albumin this enzyme does not split it up into harmless simple products. Preparations must be potent extracts scientifically prepared from the fresh gland direct. The trypsin injections must contain all the enzymes and be especially rich in trypsin and amylopsin. The injection of amylopsin is to be used at all times to meet and remove bad symptoms, and in the later periods of treatment, when all the cancer albumin has been destroyed, it must be an extract of the pancreas gland free from trypsin.

This treatment is powerless against benign tumors which are composed of real or somatic tissues and not killed or broken up by trypsin.

IRRIGATION AND DRAINAGE OF THE SEMINAL DUCT AND VESICLE THROUGH THE VAS DEFERENS.

BELFIELD (*Proceedings of Association of Genito-Urinary Surgeons,* 1906) has proposed an exceedingly ingenious and thoroughly practical procedure for the treatment of affections which have hitherto been regarded as beyond therapeutic help, excepting such as is conveyed by massage and indirect medication. He states that the vas deferens can easily be brought by the fingers against the skin of the scrotum and held there by a half-curved needle passed through the skin under the vas. A half-inch incision through the skin and envelope of the spermatic cord—painless under local anesthesia—exposes the vas. A transverse or longitudinal incision into the vas opens its canal. The blunted needle of a hypodermic syringe can be passed into this minute canal and a watery solution of any desired agent injected; this liquid traverses the vas and the ampulla, and distends the seminal vesicle.

This operation, and its utility in the treatment of gonorrheal and other pus infections of the seminal vesicle, were presented in the *Journal of the American Medical Association,* April, 1905. Further experience has improved the procedure and widened its scope. When deemed necessary, the vas is stitched to the skin by a fine silkworm-gut suture which passes through the lumen of the canal at each cut surface. Thus a fistula is maintained so long as desired; and through this fistula the vas and vesicle may be injected daily. Moreover, the vas serves as a drainage-tube for the ampulla, which drainage may be facilitated by passing a fine silkworm or horsehair thread along the vas to the ampulla, where it is left until removed for the next injection.

By this procedure direct, repeated, and successful medication of the vas, ampulla, and seminal vesicle is for the first time made possible, and without a serious operation. He usually performs the operation in his office, often unassisted, the patient walking away at its conclusion and losing no time from his vocation.

Irrigation and drainage of the seminal duct and vesicle he has found to be invaluable in the treatment of the following conditions:

1. Chronic gonorrheal infections of the seminal canal (vesiculitis), with or without a gleety discharge.

2. Chronic pus infections of the seminal canal in the middle-aged and elderly (usually mistaken for enlarged prostate).

3. Recurrent epididymitis, which results from repeated invasion of the epididymis by an infection persistent in the seminal vesicle or deep urethra.

4. Acute gonorrheal spermatocystitis; in this condition, and in other severe infections, incision into the vesicle from the rectum with the galvanocautery is sometimes desirable for the immediate relief of severe symptoms. Liquids injected into the vas then escape into the rectum.

In two cases of acute gonorrhea which presented the symptoms usually preceding extension to the epididymis, including pain and tenderness in the inguinal canal, the vas was opened and injected with argyrol solution. No epididymitis occurred; but further experience must determine the possibility

of averting gonorrheal epididymitis by this simple procedure.

In one case of tuberculosis of epididymis, vesicle, and prostate, the vas and vesicle were irrigated with carbolic acid solution—after Rovsing's method for vesical tuberculosis—without appreciable benefit.

The first injection into the vesicle should not exceed 30 minims; a larger amount may cause painful contractions of the vesicle—spermatic colic—and retention of urine, both of which effects Belfield witnessed in his early work. As the inflammatory swelling subsides, the subsequent injections may be carefully increased in quantity.

When complete division of the vas has been deemed wise, end-to-end anastomosis is easily made, after freshening the cut surfaces in old cases, by running a fine catgut or silkworm suture through the lumen of each cut end. That the catgut is absorbed he has witnessed in dogs; if silkworm-gut be used, the ends may be brought through the skin and tied loosely outside, and removed at the end of a week or more. In either case the lumen of the vas is maintained during healing. The fistula made for treatment is closed in the same way.

The infections of the seminal vesicle and vas constitute a neglected field; for the symptoms caused by spermatocystitis—pyuria, frequent and painful urination, even complete retention of urine—are generally referred to the bladder and the prostate, and treated as cystitis and prostatitis. If the subject be above forty years of age—and spermatocystitis is common after that period—he is charged with harboring an enlarged prostate and advised to submit to prostatectomy. These are the cases that were temporarily benefited by resection of the vas deferens, when that operation was popular.

By his method these very important because very common ailments are made amenable to treatment without danger to the patient or to his sexual function. It is well known that even complete occlusion of both seminal canals, as by double gonorrheal epididymitis, does not impair sexual desire or capacity, though preventing the passage of spermatozoa into the urethra; and Belfield's operation does not even occlude the vas.

The suppurating seminal vesicle has been exposed and drained through an extensive perineal incision similar to that for perineal prostatectomy. This operation, first practiced by Dittel and recently modified by Fuller, is severe and bloody, entailing risks and requiring weeks of confinement; it seems justified, if at all, only in cases of perivesiculitis. The method Belfield has devised, with or without a cautery incision from the rectum, suffices for the treatment of the vesicle, as well as the ampulla and vas.

FRACTURES OF THE METATARSUS—INDIRECT.

The importance of these fractures is largely owing to the frequency with which they are not recognized, and KIRCHNER (*Schmidt's Jahrbücher der gesammten Medicin*, Heft 8, 1906) gives in detail the signs as seen in all reported cases.

Only heavy and heavily laden persons are liable to this injury, which occurs when the foot slips from a loose stone or into a rut at the moment the heel is raised, and the weight of the body is suddenly transferred from the great toe to the smaller metatarsal bones, any of which may yield under the strain. The line of fracture is variable, but transverse is more common than oblique. There may be considerable displacement, or almost none, and either of the fragments may be dorsal. The pain is ordinarily so mild that the person continues to walk, thinking that it is due to a slight sprain. The pain frequently increases slowly, so that a physician is consulted several days after the accident, if not at once. In some cases no treatment is thought necessary.

Examination of the injured foot shows a swelling on the dorsum, but generally none on the sole. There is extravasated blood in the skin, and this is of great diagnostic importance. Localized tenderness is almost constant, but crepitation and mobility are rare. The tenderness, in association with a diffuse spindle- or ring-shaped swelling around the bone, felt on the dorsum

of the foot, is enough to confirm the diagnosis. The *x*-ray will show the fracture if it is transverse, but not if oblique, as the neighboring bones interfere with taking the picture from the proper direction. If there is displacement, or after callus has formed, the *x*-ray is almost diagnostic, and it also serves to distinguish possible tubercular disease. The prognosis is very good. Even without treatment union usually results, and the use of the foot is not affected. The time required for bony union is very variable, occurring in from nine to fifty-six days, the average being about twenty-five. This variation depends on individual factors rather than on the form of the break or the method of treatment, which is the same as that of fractures by direct violence.

SURGERY OF THE CHEST.

The following questions are considered in detail by MAYER (*Annales de la Société Royale des Sciences Médicales et Naturelles de Bruxelles,* vol. xv, No. 2): (1) What method will best prevent pneumothorax? (2) How much of the lungs may be removed without dyspnea following? (3) Is there any respiration by the pleural surface?

Three methods have been proposed for avoiding pneumothorax: (1) Suture of the lung to the chest wall to prevent its retraction; (2) insufflation of air under heavy pressure into the lungs; and (3) equalizing intrapulmonary and intrapleural pressure so that the lung loses its tendency to collapse.

The dyspnea which follows pneumothorax is not due to loss of the respiratory surface of one lung, as it is not so great when the lung is excised. It was formerly taught that more blood passed through the collapsed lung than through the expanded one, but this idea has been disproved. The dyspnea is probably due to interference with the action of the heart, perhaps from irritation of the vagus, which causes very similar symptoms. Other dangers of pneumothorax are the strain on the right heart, the loss of heat from evaporation, and the increased danger of infection of the pleura.

Of the three methods proposed to avoid the dangers, that by insufflation should be abandoned, for the following reason: The pressure in the lung is high at the wrong time, so that the blood is not drawn into the lung at the proper moment for oxygenation. The forced pressure often causes emphysema or hemorrhages. The pneumothorax persists after the operation. The danger of infection is not avoided.

Suture of the lung to the chest wall may leave permanent adhesions, and it interferes with the operation, as the attachment is not easily altered after being fixed. For these reasons the method by equalizing pressure is preferable.

The lung does not collapse if there is a difference of 10 to 12 millimeters of mercury between the intrapleural and intrapulmonary pressures. Two methods have been proposed to effect this: the first, the apparatus of Sauerbruch, consists of an air-tight room large enough to accommodate the bodies of the patient and the surgeon. A hole in one end permits the patient's head to protrude, and a rubber ring closes the opening around the neck. The anesthetist is outside the cabinet, and after the patient has been arranged and the surgeons have entered, the door is closed tight and an exhaust pump connected with the interior is started. As soon as the pressure in the cabinet is 10 millimeters lower than that outside the pleural sac may be freely opened without danger of the lung collapsing. The advantage of this method is the fact that it approaches normal conditions of pressure, the intrapulmonary pressure not being increased. Its disadvantages are the cumbrousness and expense of the cabinet and the difficulty of communication between the operator and the anesthetist. To most persons the low pressure is not disagreeable, but occasionally it causes headache and even vertigo in the surgeon.

The second apparatus, which bears the name of Brauer, is much simpler. It consists of a mask which contains the patient's head and the hands of the anesthetist, and is connected with a pump or compressed air tank, in such manner that a constant pressure of 10 to 12 mm. of mercury may

be maintained within it. Separate vessels connected with the pump contain oxygen and the anesthetic. This method, the apparatus for which is described in detail and pictured, has the advantage of small size and low cost, and the increased intrapulmonary pressure has no injurious effect unless the pressure is made very much higher. The expansion of the chest causes the expansion of the lungs under normal circumstances, but if a large part of the chest wall is removed it no longer has the power to draw the lung down in inspiration, the air passing in and out of the pleural sac, although the lung is not collapsed. In spite of this lack of pulmonary expansion there is often so sign of dyspnea, and Mayer felt that part of the aeration of the blood must be carried on by the pleural surface. Experiments made by passing air through two fistulæ in the pleura showed that in a quarter of an hour 30 centigrammes of CO_2 were given off. This is much greater than the amount given off by the peritoneum. If the trachea is closed so as to prevent all respiration, the animal lives much longer if the chest wall is freely opened. Finally, gases such as hydrogen sulphide are absorbed much more rapidly from the pleura than from the rectum or peritoneum.

The amount of lung tissue that can be removed without interfering with oxygenation is very surprising. The left lung and half the right has been removed at once without causing death, and an animal lived a long time with no sign of dyspnea after removal of the left lung and the right upper lobe, and another after removal of the entire right lung. The deaths after resection of lung tissue are generally due to septic infection, and although this is generally the result of the escape of bronchial contents into the cavity Mayer was struck by the fact that every dog on which he performed resection of a rib died of septic infection. His technique for resection of the lung is now as follows: The apparatus of Sauerbruch or Brauer having been connected, a long incision is made in the middle of the seventh interspace, the ribs are separated, and the hand introduced into the pleural cavity grasps the lung and squeezes out the air and blood. A heavy silk ligature is then thrown around the hilus and the peripheral portion of the lung resected with the thermocautery. This seals the bronchioles and prevents hemorrhage. The cavity is then dried and the wall closed without drainage. The pump is stopped gradually. Many of the animals seem to bear the operation well, but die a few days after with signs of dyspnea. Autopsies on these animals showed that the cause of death was a phlebitis of the pulmonary vein. The clot extended to the point of ligature, and even beyond this to the heart. Death is due to the interference with the action of the right heart, not to loss of respiratory surface.

Mayer finally considers the justification of certain operations on the lungs, especially the excision of tubercular lesions. The curability of this disease in the early stages renders operation inadvisable, but in advanced cases, when the lesion is localized but has proceeded to cavity formation, operation is frequently justified. The best treatment here as elsewhere is to put the part at rest, and this is best done by making a large opening in the bony wall immediately over the cavity. This prevents expansion of the corresponding portion of the lung and has given very good results in a large number of cases, while excision of the diseased part has not been so successful. In injuries of the thorax it is best not to interfere unless the lung is so badly injured that it continues to bleed for some time or pneumothorax follows. Under such circumstances the pleura should be opened under negative pressure and the wound of the lung sutured. In cases of pyothorax, if recent, so that the lung is still elastic, the best treatment is drainage by means of a rubber tube which passes through the chest wall and dips by its lower end into a vessel of antiseptic solution. If, however, the case is of long standing it is necessary to open the chest freely, excise the thickened pleura, and obliterate the pleural cavity. In doubtful cases an exploratory opening should be made, and then if possible the wound closed and drainage used.

END-TO-END ARTERIOVENOUS ANGEIORRHAPHY.

LILIENTHAL (*Annals of Surgery*, January, 1907) after a futile administration of drugs for the cure of an arteriosclerotic gangrene of the foot, determined to attempt an end-to-end arteriovenous suture with the idea of arresting the necrotic process by diverting the arterial current into veins. With this end in view he made an incision over the popliteal artery, but found it absolutely obliterated. Some days later he made a four-inch incision crossing Poupart's ligament and running approximately in the line of the femoral vessels. On exposure of the femoral artery it was noted that its pulsation existed only in its uppermost portion, so that the anastomosis with the vein had to be made above the saphenous tributary. Femoral pulsation was controlled by a tape ligature clamped around the external iliac artery. A loosely knotted piece of catgut was also placed around this artery to be used in case of the accidental slipping of the tape. The vein was permanently ligated below this point at the same level as the temporary arterial ligature. The artery was then severed about one centimeter below the point of intended anastomosis, and the vein about the same distance above it. This allowed the mouths of the two vessels to be brought together readily. The stump of each vessel was carefully emptied of residual blood and was filled with sterile vaselin as advised by Carrel.

The stitches were passed by means of a No. 12 milliner's needle carrying 00 silk, the latter having been sterilized by vaselin. Three anchor sutures were passed, bringing the open mouths of the two vessels together, so that when stretched in different directions there was formed an equilateral triangle. Each stitch was passed directly through the coats of all the vessels in such a manner as to avoid the turning in of the walls, but rather to evert them ever so slightly to insure the contact of the intimas. By traction upon these anchor sutures, two at a time, the contiguous parts of the vascular walls were rendered straight and parallel, and were united by a running suture which was tied to an anchor suture as soon as it was reached. Just before tying the last running suture to its anchor the vessels were emptied of vaselin by gentle manipulation. The final knot being tied, the tape compressing the femoral artery was removed, and at once the pulsating current was established from artery to vein without the suspicion of leakage. Moreover, from the ulcer, which at the beginning of the operation was markedly cyanotic and did not bleed, bright-red blood began to exude. The patient was in a condition of shock at the end of the operation, which consumed about fifty minutes. Death occurred thirty-one hours after operation.

Examination of the anastomosis showed a smooth union with an extremely small clot in the vein, possibly formed just before death.

POSTOPERATIVE EVENTRATION.

RHEAUME (*L'Union Médicale du Canada*, vol. xxxv, No. 9, 1906) cites Wenter's statistics to the effect that of a thousand operations performed in the Berlin clinic one-third of the women subsequently suffered from eventration. If, however, the abdominal walls be sutured in three planes the accident occurs in only five per cent of cases. The author states that even with modern technique the accident is sufficiently common, and observes that the position of the incision is a distinct predisposing factor. The middle line, because of its lack of vascularity, heals slowly, and lacking in muscular elements readily gives way after consolidation. Drainage, suppuration, incisions of large size, and abdominal distention are all predisposing factors. The author advises opening the abdomen through an incision placed three or four centimeters one side or the other of the middle line. This cut is made as short as possible. Before closing the peritoneum tension sutures of silver are introduced, entering the skin about 4 centimeters to

one side of the cut, traversing obliquely the entire thickness of the abdominal wall, including the peritoneum, and emerging 4 centimeters on the other side. The peritoneum is then brought together by buried suture; a second suture approximates the anterior aponeurosis covering the rectus muscle, and a third suture closes the skin incision. Thereafter these sutures are relieved of all tension by means of little pledgets of absorbent cotton slipped over each end of the wire tension sutures, followed by one-eighth inch of drainage tube, and the whole clamped down against the skin by means of a perforated shot. When the incision is 10 centimeters in length a single relaxing suture is sufficient. A long incision requires two or three such sutures. They are left in place for about fifteen days.

As to the results, the author notes that sometimes a superficial sloughing of the skin is produced by a pledget of cotton. Because of lessened tension on the lines of suture suppuration is less frequent.

ACUTE INTESTINAL OBSTRUCTION FROM PARALYTIC DISTENTION.

A case of intestinal obstruction due to volvulus, which was mistaken for appendicitis, and operation delayed until too late, serves LENNANDER (*Deutsche Zeitschrift für Chirurgie*, Band lxxxvi, Heft 1) as a text for a discussion of the treatment of paralysis of the bowel.

In abdominal conditions whose nature is obscure it is most important to determine whether an operation is likely to be necessary, and if so, to transfer the patient at once to a hospital, where the operation may be performed without delay. If the intestine is distended with gas, the rectum and stomach should each be washed out several times, and if this fails to bring away enough gas to reduce the abdominal tension, the transfer to the hospital should be made at once. Here the stomach and rectum are again washed out, and if the gas does not escape the abdomen should be opened. A certain amount of distention causes paralysis of the intestinal wall, and a paralyzed portion of the intestine is as impassable as a stricture. The paralyzed wall is easily penetrated by bacteria, and if operation is delayed peritonitis will result. Early operation is therefore demanded, and if we wait for such absolute signs of obstruction as fecal vomiting, the patient will probably die in spite of operation. The cases which get better, then worse, must be watched with particular care.

At the operation the bowel should be opened in several places. If the intestine is merely overdistended but not paralyzed it will immediately begin to move and continue to empty itself. If it is paralyzed it will not move even when empty. For this reason a permanent opening or fistula must be placed about the paralyzed part. If the upper part of the bowel is paralyzed, it is best to make the fistula in the stomach. The pyloric portion should be selected, as this empties itself most readily. If a large part of the bowel is paralytic, it is best to make a number of fistulas. The use of a glass tube is the best method of fistula formation, and on account of the valves a tube in the jejunum must extend at least four-fifths of an inch into the lumen of the bowel, and have at least three openings. If the size of the abdomen increases after the operation the stomach should be washed out, and if odorous liquid is found in it a gastric fistula should be made at once and the stomach kept empty. The fistula will always close promptly as soon as the pylorus is free and the tube is removed. If in spite of the bowel being emptied it cannot well be entirely replaced in the abdomen, it is best to leave the abdominal wound open, with the bowel outside. The mass of intestine is covered with a sheet of thin, smooth rubber, which is sutured at intervals to the parietal peritoneum. On this sheet is laid a thick, sterile, absorbent dressing, fastened with broad straps and covered by sterile wool, to keep the abdomen warm. The bowels gradually sink back into the abdomen, and the perineal secretion flows out between the rubber and the skin. The adhesions which form between the loops of intestine are much less firm than if the intestines were covered

with gauze, and a beginning peritonitis may even heal under the use of this dressing. The fact that adhesions are very slight, when rubber dam is used instead of gauze, makes the former more suitable for drainage. Gauze should no longer be used for this purpose in the abdomen.

A case is reported by Lennander (*Deutsche Zeitschrift für Chirurgie,* Band lxxxv) in which the stomach was dilated as well as the bowel. A man who had always had stomach trouble, induced by congenital narrowness of the pylorus, was suddenly attacked with extreme pain in the abdomen associated with excessive distention with gas. As rupture threatened the abdomen was opened below the navel, the incision passing directly into the enormously distended stomach, which was full of gas and liquid, although lavage had brought nothing away, the stomach having lost the power to contract. The duodenum was also enormously distended, and the greater part of the jejunum and ileum was twisted 360 degrees on its mesentery. As the bowel had lost its contractility, a fistula was made in the jejunum and one in the ileum. The latter could be immediately closed. The openings in the stomach and jejunum were left. During recovery acute obstruction occurred from kinking. This was relieved and gastroenterostomy performed. Recovery was complete. In connection with this case Lennander lays stress on the advantages of a pyloric as compared to a duodenal fistula. The other cases of acute dilatation of the stomach which have been reported had the same symptoms as this case—excessive pain and distention, anuria, and collapse.

THE TECHNIQUE OF TUBATION OF THE PHARYNX TO FACILITATE ADMINISTRATION OF ANESTHETICS.

McHenry (*Long Island Medical Journal,* February, 1907) records his improved technique as follows: The patient is reduced to complete surgical anesthesia in the usual way. The pharynx is then cleansed by a small gauze sponge held by a long pair of forceps and cocainized by one-tenth per cent solution of cocaine. Two rubber tubes as long as will pass, thereby fitting snugly, cut on the bias and fenestrated laterally near the ends, are inserted into and through the nares as far back as the epiglottis, which will be felt as an obstruction to further passage of the tubes.

The mouth is then widely opened and the tongue drawn well forward and out.

With one good-sized gauze sponge the entire pharynx is then packed, while making traction upon the tongue, as far back as the tubes. This forms, when in position and properly packed, an air-chamber or space in which the tubes and larynx communicate.

The tubes are severed an equal distance from the nose.

The anesthetist listens carefully to ascertain if the patient is breathing through the tubes. If not the gauze packing in the tubes is too deep, allowing no space for air, and should, therefore, be repacked until rhythmical breathing is heard through the tubes. The tubes are now joined by a Y-shaped hard-rubber tube to which is attached by means of another rubber tubing a hard-rubber funnel covered with two to four thicknesses of gauze.

The anesthetic is then administered by pouring upon the gauze funnel.

It is held that the aspiration of blood and vomitus is impossible, and that the mucus forming in the throat is absorbed by the gauze sponge, which further acts as a hemostatic because of its pressure upon the base of the tongue, controlling to a great extent the hemorrhage, excepting in operations in which the lingual arteries have been severed. The head may be placed in almost any position advantageous to the operative technique regardless of resultant hemorrhage. The anesthetist, the cone and apparatus, are all removed from the field of operation.

McHenry emphasizes the necessity of using considerable gauze in packing the pharynx, so much as almost to fill the space; then subsequent loose packing of the remainder. But one piece of gauze is employed. He also insists upon the lateral

fenestration of the tubes at their ends, since the air space is greater from side to side than from before backward, and the plane of the bias-cut end should be downward and backward.

ROTARY DISLOCATION OF THE ATLAS.

CORNER (*Annals of Surgery*, January, 1907) observes that the atlas rests upon two oppositely inclined planes of the axis, and that in order to allow for the gliding movements of these joints the ligaments are lax and loose, in consequence of which the heads msut be held firmly by muscular effort and not by any other means. If this tonic muscular action is abolished the ligaments allow the head to rotate 30 degrees either side of the middle line.

Corner has collected twenty examples of rotary dislocation of the atlas, two occurring in his own practice. There is usually a history of accident in which violence is applied to the front and top of the head. Paralysis and anesthesia are absent, nor is there a recorded case of spinal concussion. The neck is stiff, tender, and capable of little movement. The head is flexed and turned a little to one side, usually the right. In severe examples it may be bent toward one shoulder, so that the chin points to the other side. Under such circumstances the head probably cannot be moved. In the less severe variety the head can be rotated more to the side to which it is directed than to the other. The side to which the chin is directed is that on which the transverse process of the atlas is rotated backward. The side to which the head cannot be rotated is wholly or only partially dislocated. The joint of the side to which the head is rotated is fixed, forming the center of a curve along which the other joint moves. Thus on turning the head to the right, the right atlanto-axial joint is fixed and the left moves. If the left side is dislocated the head can only rotate a little to the right, as the left joint does not exist. It can be rotated a little to the left, since the right joint can move only a little, as the forwardly dislocated left joint is the fixed point and will not permit more. Normally the transverse process of the atlas can be felt half-way between the tip of the mastoid process and the angle of the jaw. This can be felt plainly on the side from which the head is turned, unless when the patient looks forward it is hidden by the angle of the jaws. The side to which the head is bent cannot always be felt; the fingers sink inward and forward deeply into the neck, since the transverse process has been displaced backward. Over the back the spine of the axis, when it can be felt or seen, is deviated somewhat to the side from which the head is bent. This is due to the lateral curvature of the cervical spine caused by the flexion and rotation of the head. Great prominence means much forward displacement of the head, and therefore indicates that the odontoid process is probably broken. Examination of the pharynx reveals two prominences, that on one side being due to a forwardly displaced transverse process, and that on the other, which is bulky and less distinctly defined, being due to the part of the axis which has been rendered prominent by the backward displacement of the transverse process of the atlas on that side. Lateral skiagraphy shows a forward displacement of one side of the atlas owing to the transverse axis of that bone being oblique to the rays. It is most important to determine whether the odontoid process has been broken, since this latter complication greatly increases the danger of attempts at reduction. Anterior skiagraphy shows nothing, and owing to rotation of the head and patient's inability to open the mouth wide a skiagraph of the odontoid process cannot be obtained.

The points which are relied upon for diagnosis are the position of the head, the position and fixity of the transverse process of the atlas, the examination of the pharynx, and the skiagraph of the lateral view of the neck. There is usually nothing which will absolutely exclude fracture of the odontoid process.

In treatment the question is whether to reduce the dislocation or not. If the acci-

dent has already happened for a fortnight to a month, or the odontoid process is thought to be intact, an anesthetic may be given. In a number of the cases spontaneous reduction occurs when the muscles are relaxed. In others gentle traction upon the head and rotation will bring about the desired result, after which the head can be put up in a plaster-of-Paris collar or in wood-wool and bandages. If the odontoid process is thought to be broken attempts at reduction are unwise. The patient should be kept in bed with the head immobilized by a sand-bag, and three weeks later should be given an anesthetic to examine the pharynx and reduce the dislocation. Should the surgeon not reduce the dislocation the head is put in a poroplastic collar. The movements of the neck will return, but will be limited.

REVIEWS.

PHYSICAL DIAGNOSIS. With Case Examples of the Inductive Method. By Howard S. Anders, A.M., M.D. Illustrated. D. Appleton & Company, New York and London, 1907.

We are told in the Preface of this volume that it has a "double-barreled purpose," namely, to counteract as far as text-book influence may the tendency of students to rely upon laboratory methods rather than the methods of physical diagnosis in reaching an opinion concerning a case, and also to prevent them from reaching conclusions by superficial and hasty methods. The book follows the course usually laid down in most works devoted to physical diagnosis, first giving the topographical anatomy of the chest and then a description of the abnormal thorax, proceeding from this to the discussion of the various methods of palpation, percussion, and auscultation.

The second section of the book is devoted to a description of some of the diseases of the respiratory tract, "inductively considered," and consists of hypothetical and recorded cases. The third section of the book deals with the heart and pericardium and with the blood-vessels. Section V deals with the general examination of the abdomen, Section VI with the special organs of the abdomen, and Part VII with the use of the Roentgen ray in medical diagnosis. Much more space is devoted to this method of diagnosis than is commonly found in books devoted to this subject. A large number of the illustrations are taken from Butler's work on Diagnosis, published by the same house. The book does not profess to be one including much original observation, but is a good summary of the subject of which it treats, and it can be put in the hands of students with advantage.

MEDICAL JURISPRUDENCE, FORENSIC MEDICINE, AND TOXICOLOGY. By R. Witthaus, A.M., M.D., and Tracy B. Becker, A.B., LL.D. Second Edition, Volume II. William Wood & Co., 1907.

A number of months ago we took pleasure in calling attention to the fact that the first volume of the second edition of this work had appeared from the press of Messrs. William Wood & Co. The first edition so quickly took its place as a standard reference work on the subject with which it deals that the road to popularity for the second edition is an easy one to travel.

The opening pages of this second volume contain tables of cases cited, and then under the head of Forensic Medicine a chapter is taken up on the medicolegal consideration of wounds of all kinds, except gunshot wounds, by Dr. George Woolsey, of New York. His article covers nearly 150 pages, and is followed by one by Dr. Roswell Park, of Buffalo, upon the forensic relations of gunshot wounds, and this in turn by one upon the medicolegal relations of electricity by Dr. William N. Bullard. The next part of the volume is taken up

with chapters upon strangulation and hanging, abortion and infanticide, and with those medical examinations of the living human body which are required or permitted by courts of law. This chapter is followed by one upon rape, another upon unnatural crimes, and others upon railway injuries.

The value of this work to surgeons and physicians who may be called upon to testify in medicolegal cases cannot be estimated. It is so full of valuable advice and pointed references, and is so evidently compiled by men who emphatically write from the standpoint of experience, that its contents are worthy of our most careful consideration.

A Text-book of Practical Therapeutics. With Special Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc. Twelfth Edition, Enlarged. Price $4.00.

The preface of the twelfth edition of this book is self-explanatory:

"Since the appearnace of the eleventh edition of this book eighteen months ago it has been necessary to reprint it on three occasions, a fact which would seem to indicate that the text continues to meet the needs of practitioners and students. In presenting the twelfth edition the author wishes to state that he has thoroughly revised it, and in many ways endeavored to increase its usefulness. More complete information is given as to Materia Medica than ever before, and a considerable number of the recent advances in therapeutic procedure have been introduced. Thus, the value of citrate of sodium in the feeding of bottle-fed babies, the use of calcium lactate, hypodermically and by the mouth, in hemophilia, urticaria, and oozing hemorrhage, are discussed. More information is given as to the best methods of treating syphilis by the hypodermic injection, and the importance of using saline solutions of exact strength for intravenous injection is emphasized. So, too, the value of citric acid for preventing thrombosis in typhoid fever is considered, as is the important subject of the danger of toxemia after the use of chloroform and ether. A very considerable number of drugs which have been introduced during the last two years, or which having been introduced but a short time when the eleventh edition appeared did not seem worthy of mention, but which have since proved their usefulness, are discussed. The author is also glad to state that through the courtesy and kindness of Dr. G. E. de Schweinitz, Professor of Ophthalmology in the University of Pennsylvania, the articles upon the treatment of the common diseases of the eye have been carefully revised. So, too, Dr. Barton Cooke Hirst, Professor of Obstetrics in the University of Pennsylvania, has revised the articles on the treatment of Diseases of the Puerperal Period, and Dr. Edward Martin, Professor of Clinical Surgery in the University of Pennsylvania, has revised the articles upon Antisepsis, Gonorrhea, and Syphilis. It is also perhaps worthy of note that since the appearance of the eleventh edition this book has been translated into the Italian and Chinese languages."

Atlas and Epitome of Diseases of Children. By Dr. R. Hecker and Dr. J. Trumpp. Edited by Isaac A. Abt, M.D. W. B. Saunders Company, Philadelphia, 1907.

Many of the profession are familiar with the excellent series of atlases published by the W. B. Saunders Co., of which this is one. The present issue is of the best. It does not pretend to be a complete compendium of diseases of children, but, as its name indicates, an atlas illustrating various types of disease, both internal and external, accompanied by sufficient text to make the plates interesting and valuable.

The Treatment of Skin Cancers. By William S. Gottheil, M.D. International Journal of Surgery Co., New York, 1907.

Many of the readers of the Therapeutic Gazette are familiar with the writings of Dr. Gottheil, who is known as one of the foremost dermatologists of the day, possessing not only practical skill but the ability of describing in an interesting way the methods to which he resorts in the treatment of patients suffering from lesions of the skin. The pages of this tiny volume, which has now reached its third edition, deal chiefly

with the use of the *X*-Rays, Radium, and the High-tension Current as means of treating skin cancer. Many illustrations have also been introduced illustrating the effects which the author has obtained by the use of these measures.

A TEXT-BOOK OF MATERIA MEDICA FOR NURSES. By George P. Paul, M.D. The W. B. Saunders Company, Philadelphia, 1907.

There are so many excellent books of this character already on the market that one naturally looks through the pages of this one to determine whether it differs materially from its predecessors. The drugs are considered in alphabetical order. There is a part devoted to new medicinal agents in which many of the newer drugs are considered. There are also chapters upon hydrotherapy, heat and cold, and remarks in regard to the employment of various antiseptics and antitoxins. Very little attention is given to the direct therapeutic application of the drugs. Considerable attention is paid to dosage and official nomenclature.

TEXT-BOOK OF EMBRYOLOGY. For Students of Medicine. Price $3.00. By John Clement Heisler, M.D. Third Edition, Thoroughly Revised. W. B. Saunders Company, Philadelphia, 1907.

Previous editions of this well-known book on Embryology have been reviewed in terms of praise in the THERAPEUTIC GAZETTE. The present volume possesses all the advantages of the earlier editions, and is perhaps the best which can be placed in the hands of students for studying human embryology. The type is clear, well-spaced, and the illustrations are excellent.

A PRACTITIONER'S HANDBOOK OF MATERIA MEDICA AND THERAPEUTICS. To which are added some Pharmaceutical Data. By Thomas S. Blair, M.D. The Medical Council, Philadelphia, 1907.

This book finds its reason for existence in the therapeutic optimism of the author and in his strong belief that moderate doses of active drugs are what is needed in the majority of cases. Unlike most books of the present time which are devoted to this subject, it covers not only those remedies which are commonly employed by so-called regular practitioners, but also many of those which are used by eclectics and homeopaths. As the book is a small volume of only about 250 pages, it can readily be understood that the description of each individual drug cannot be at all exhaustive. As a text-book of therapeutics it is incomplete. As one which will give practitioners many useful little helps in regard to the frequency and manner of administering drugs it can be commended.

HINTS ON THE MANAGEMENT OF THE COMMONER INFECTIONS. By R. W. Marsden, M.D. E. B. Treat & Company, New York, 1907.

This little book is designed by its author to give minute details in regard to a number of remedial measures which are commonly resorted to by physicians. The first chapter deals with the modes of applying cold to the skin, with the arrangement of the bed of the invalid, and discusses ventilation, feeding, drugs, and stimulants. As all of this is included within the brief space of 29 pages it will be seen that it is not very exhaustive. The second chapter is divided into 27 parts, in which the treatment of a very large number of infectious diseases is briefly gone over. We fail to see the niche which this book will fill in medical literature, as it is too brief to be of much value to the student or practitioner.

THE PRACTICE OF GYNECOLOGY IN ORIGINAL CONTRIBUTIONS BY AMERICAN AUTHORS. Edited by J. Wesley Bovee, M.D. Illustrated. Lea Brothers & Co., Philadelphia and New York, 1906.

This book is offered the profession as a practical treatise on Diseases of the Generative Organs of Women and of the Urinary System and Rectum. Its contributors are Bovee, Goffe, Miller, George H. Noble, Schenck, Watkins, and Werder. The last named author contributes the first chapter upon Examination of the Pelvic Contents, which is brief but to the point.

Bovee writes upon Developmental Anomalies of the Female Generative Organs, illumining his article with a series of striking illustrations.

Goffe deals with the subject of Menstruation, including under this heading the menopause. The chapter upon Displace-

ments of the Uterus gives small place to any treatment other than operation.

Noble's section upon Fecal Fistulæ Connecting with the Female Generative Organs is particularly well done, the illustrations in themselves being almost enough for the enlightenment of the practiced surgeon. Lacerations of the Perineum; Diseases and Injuries of the Vulva and Vagina, are equally well treated by him. In considering the treatment of sterility he holds that vicious sexual habits are largely responsible for the increasing proportion of neurasthenic women, and advises as a remedy against sterility that "it is better copulation should occur twice within a few hours with abstention for ten days than once every one or two days."

Bovee contributes a brief and very excellent chapter upon Diseases of the Rectum and Anus. Inflammations of the Uterus, Lacerations of the Cervix, Fibromyomata and Malignant Tumors are adequately discussed by Miller.

Goffe gives in minute detail the vaginal method of operating, whilst Werder, with an equal thoroughness, takes up the abdominal operation, together with its complications. Diseases of the ovaries and Fallopian tubes are given more careful consideration than is usually awarded to them in text-books on gynecology. The book closes with a brief but very excellent series of chapters on the urinary tract.

This work is scholarly, comprehensive, modern, and thoroughly satisfactory.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.D., F.R.C.P.

Amongst recent papers of interest must be mentioned one read by Dr. D. B. Lees at the Hunterian Society on the administration of salicylates. Very different opinions have been held as to the value of salicylates in rheumatism. It has been asserted by some physicians of large experience that these salts have no effect whatever upon rheumatism beyond relieving pain in the joints, and many have held that so far from exercising any beneficial effect on the cardiac complications of rheumatism, the salicylates aggravate the acute heart inflammations of rheumatism by their depressing effect. Dr. Lees in his recent address declared that the salicylates have just as specific an effect in rheumatism as quinine has in malaria or mercury in syphilis. The supposed depressing effect of the salicylates is due, he said, not to the drug but to the disease; the symptoms due to bad heart disease or to the rheumatic toxin are attributed to the drug. This is particularly unfortunate, for physicians consequently give the drug in far too small doses; and this is the reason why in many instances no good effect is observed. He admitted that vomiting, tinnitus, and other unpleasant effects occasionally occur where large doses are used, but the indication then is not to abandon the drug but to reduce the dose temporarily, after which it will often be found that the patient can take even a larger dose than that which previously had a toxic effect. He had given as much as 600 grains of sodium salicylate with 1200 grains of sodium bicarbonate in twenty-four hours to a boy aged fifteen years, and had continued 500 grains of the salicylate per diem for three weeks. He emphasized the importance of combining the sodium bicarbonate with the salicylate, otherwise a dangerous toxic condition might result, resembling in some respects diabetic coma. The sodium salts he considered preferable to the potassium salts, as being less depressing; but he would not admit that even in acute pericarditis anything but benefit is likely to result from the administration of large doses of salicylate.

A notable event of the past month was

the eightieth anniversary of Lord Lister's birthday. Addresses of congratulation were sent not only from most of the scientific bodies in this country, but from all parts of the world—a well-merited tribute of universal respect to the man who made possible the triumphs of modern surgery, and whose gospel of asepsis has saved multitudes from suffering and from death. A more permanent tribute is to be the publication of all his writings, which are to be collected and published in suitable form, by a committee of distinguished scientists from many countries.

There is in London an Institute of Hygiene, at which lectures of a semipopular character are frequently delivered by well-known medical men. During the present month Dr. Rentoul, of Liverpool, who has written much on the social aspects of medicine, advocating for instance the sterilization of mental and physical degenerates, discoursed nominally on "Woman's Health, Our Greatest National Asset." His lecture, however, was mainly a plea for some revolutionary methods of insuring matrimonial bliss, so far as medicine and law combined can do this. He would tax bachelors, he would reduce taxation for the needy couple who showed their merit by being prolific; proof of disease in the rejected party should absolve from breach of promise; no one should be allowed to marry without a certificate of good health; and so on and so forth. All very excellent, no doubt; but what about the winged boy with the bow?

The few cases of "spotted fever" which occurred in London have not led to any epidemic outbreak during the past few weeks; and no such prevalence has been noticed here as in Edinburgh and Glasgow. London, indeed, heartily abused as it is by many of those who dwell in it, remains after all a remarkably healthy place.

Sir Frederic Treves and Sir Francis Laking, the surgeon and physician who had charge of the King during his attack of appendicitis in 1902, have received an unusual honor in being allowed to add to their shields one of the lions of the royal arms. Apart from the pleasure which the whole profession in this country feels in any honor conferred upon its members, it is specially gratifying that the King, who indeed is himself an Honorary Fellow, and the only Honorary Fellow, of the Royal College of Physicians, entertains so high an opinion of the medical profession.

A new medical society is to be added to the many already existing in this country, but upon different lines from those which have hitherto been usual. Its membership is to be limited to physicians who are actively engaged in the teaching of medicine or in research, and the society, which is to be called the Association of Physicians of Great Britain and Ireland, is to meet once a year for three days in university towns, and towns which are the seat of recognized medical schools. One important difference between this society and other medical societies is the exclusion of reporters from its meetings—a boon indeed, and a rule more likely to promote free and useful discussion than any other regulation could do. There is some talk of publishing an "Archives of Medicine" in which the papers of this association of physicians might appear, a journal to be devoted purely to medicine as distinct from surgery; but at present this is somewhat *in nubibus*

Among the deaths in the medical profession during this month must be mentioned that of Dr. W. H. Ransom, of Nottingham, whose name, although he had retired from practice, was familiar in this country. He was elected a Fellow of the Royal College of Physicians nearly forty years ago, and for his distinguished position in medical science had received the Fellowship of the Royal Society. Another well-known member of the profession, whose name however is connected more closely with the literary aspect of medicine than with its practice, was Mr. T. H. Wakley, editor of the *Lancet* and son of the Mr. Thomas Wakley who originally founded the *Lancet*. Mr. Wakley died this month at the age of eighty-six years.